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THERAPEUTIC ACTION OF POTASSIUM IODID IN EXPERIMENTAL SYPHILIS OF THE RABBIT*

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Although the iodids have been employed in the treatment of syphilis for many years, their mode of action is still obscure. Clinical experience has shown that iodin compounds have little or no therapeutic effect in the early stages of the disease, due, it is asserted, to the absence of spirocheticidal action; and experimental confirmation of this opinion has been brought forward by Nichols,[1] who found that the administration of the amount of potassium iodid tolerated by the body (rabbit) was without effect on the number and motility of the spirochetes of the primary chancre. On the other hand, Neisser[2] reported that it was possible to prevent syphilis in the monkey with potassium iodid, if massive doses of from 7 to 8 gm. were administered subcutaneously at the time of or four days after inoculation; that is, no primary lesion was obtained; but Neisser does not state whether secondary lesions ultimately developed. Furthermore, the results of his reinoculation and organ inoculation experiments designed to demonstrate the absence or presence of infection were inconsistent.

It has long been known, however, that the administration of iodin is beneficial in congenital syphilis and in stages of acquired syphilis with gummatous lesions. It has been thought that such an effect is accomplished by the breaking down of fibrous tissue, or by promoting fatty degeneration and absorption of imperfecily formed exudates. Jobling and Peterson,[3] however, are of the opinion that the real explanation lies in the ability of iodin to neutralize the action of the agents (antienzymes) which prevent resolution and absorption of diseased and necrotic tissue, and thus open the way for the action of antispirochetal agents. It has also been suggested that iodin is an adjuvant to mercury and intensifies its action. From the many suggestions that

* From The Laboratories of the Rockefeller Institute for Medical Research, New York.

1. Nichols, Henry J.: J. Exper. Med. **14**:196, 1911.

2. Neisser, Albert: Arb. a. d. k. Gsndhtsamte **37**:306, 1911.

3. Jobling, J. W., and Peterson, W. F.: Bull. Johns Hopkins Hosp. **26**:356, 1915.

have been advanced to explain the known clinical effect of the drug, one assumption is common to all: an operation of an indirect action of some kind, since the effect of iodin therapy is not directed toward a primary parasiticidal action on the invading organism. It is conceivable that under such conditions the host may be affected or concerned, and with a substance such as iodin, this effect or participation might be significant.

At the present time, our knowledge of experimental syphilis is sufficiently comprehensive to permit the study of therapeutic agents from a new point of view, as it takes into account the evolution of the disease, including not only the character and course of the primary lesion, but also the generalized or secondary manifestations, and the ultimate outcome of such lesions as well. Thus, in a consideration of the entire disease picture, as now known, the significant factor of the reaction or resistance of the host is introduced. It is from this broader standpoint that we have undertaken the study of a number of therapeutic agents in experimental syphilis of the rabbit.

EXPERIMENT

The experiment reported in this paper was carried out with three groups of six rabbits, each rabbit being inoculated in the right testis with 0.2 c.c. of a saline testicular tissue emulsion containing from four to six spirochetes per dark field. The emulsion was prepared from an actively progressing orchitis produced by the Nichol's strain of *Spirochaeta pallida*.

The experiment was begun on Jan. 26, 1922, and was terminated four months later. This period insures a study of generalized lesions in remote parts of the body, since the usual time of their occurrence is within two to three months after inoculation. Moreover, in the majority of rabbits and with an infection of average severity, most lesions have regressed and healed four months after inoculation, except certain residual lesions of the genitalia, so that the infection has reached or is approaching a state of latency. At the conclusion of the experiment, the animals were killed by ether anesthesia, and complete gross and histologic examinations were made. The scope of this paper precludes the inclusion of these observations.

Potassium iodid was administered intravenously in repeated doses to Groups A and B, beginning on the day of inoculation. It was planned to give the drug twice a week during the course of the experiment, but during the third week, as several animals in each group became irritable, weak and thin, a weekly system of administration was adopted, with no subsequent untoward effects. The last dose was given approximately a week before the conclusion of the experiment.

The rabbits of Group A received eighteen doses of 0.006 gm. per kilogram of body weight, in a 0.1 per cent. solution; while those of Group B received nineteen doses of 0.0003 gm. per kilogram in a 0.03 per cent. solution. Thus, the animals in Group A received a total amount of 0.108 gm., and those of Group B, 0.0057 gm. per kilogram of body weight. The size of the larger dose, 0.006 gm. per kilogram, was chosen because it is comparable to a dose which might be employed in human therapy; the smaller amount of 0.0003 gm. per kilogram (one twentieth of the dose employed in Group A) was selected for the purpose of determining the therapeutic action, if any, of an appreciably smaller amount of the drug; at the same time, the possibility of a stimulative effect or of the drug serving as an accessory nutritive factor was considered.[4]

The third group of rabbits, Group C, was not treated, and thus the course of the disease in these animals served as a control with which to compare the infection in the treated animals of Group A and B.

RESULTS

The results of the experiment are summarized in Table 1, which contains an abbreviated clinical record of individual animals. The disease in the untreated rabbits comprising Group C will first be described as a basis of comparison with that of the treated animals of Groups A and B.

Considering the control group as a whole, it is seen that, in general, the infection was of average grade. A well marked primary orchitis with an average incubation period of ten days developed in five rabbits; in the remaining animal, Rabbit 2, the major part of the inoculation was apparently made into the head of the epididymis, and an orchitis was not detected for twenty-four days. The average duration of progressive activity of the primary lesion, that is, before regression could be detected by palpation, was fifty-eight days. In four rabbits, healing was accomplished in eighty-one days on the average; but in two animals, residual, still active, testicular lesions were present at the termination of the experiment. An extension of the syphilitic process to the head of the right epididymis occurred in all rabbits of the group in four weeks, and to the tail of the epididymis in four animals five weeks after inoculation. There were five instances of a periorchitis, four of which were marked.

4. Additional studies with potassium iodid, which will be reported elsewhere, show that the commonly accepted views of the toxicology of this substance may need to be subjected to considerable revision. For this reason, no attempt is made to relate the amount of drug employed to a minimum lethal or a tolerated dose.

Metastatic lesions of the uninoculated testis occurred in each rabbit and were detected by palpation on an average of from four to five days after inoculation. In three animals, the orchitis developed into a well marked process; in one it was of a moderate grade, and in two of a comparatively slight grade. The head of the left epididymis became involved in three rabbits and the tail in one rabbit approximately two months after inoculation, and three weeks after the occurrence of the metastatic orchitis. In five instances there were right scrotal chancres, three of which were very large, while two were small; their average incubation period was nine weeks. In the left scrotum of two rabbits, twelve weeks after inoculation, small chancres developed; while in another (Rabbit 5) six weeks after inoculation, a number of cutaneous papules occurred.

At the close of the experiment, four months after inoculation, four of the six controls still showed eleven residual lesions of the genitalia. Thus, there were two instances of a primary and one of a metastatic orchitis, two of a right periorchitis, four of a right and one of a left epididymitis, and one of a right scrotal chancre. Two rabbits—Nos. 1 and 5—had been free from palpable and visible genital lesions for nine and fourteen days, respectively.

Generalized manifestations of the disease in remote parts of the body occurred in five control rabbits, or 84 per cent., and numbered twenty-five definite lesions, distributed as follows—bone, five; skin, eighteen, and eyes, two. In addition, there were five suspicious lesions of the bones and skin that have not been included.

The bone lesions which developed on an average of two months after inoculation were neither extensive nor destructive. They consisted of the usual small osteal and periosteal granulomatous nodules situated at or near the epiphyses of the long bones. The average duration of these nodules, as measured by the time at which healing was accomplished, was twenty days.

Lesions of the skin developed on an average of sixty-nine days after inoculation. The majority were small and moderate sized granulomatous papules or nodules, with or without surface ulceration, and situated about the hind feet and forepaws. In addition, there were two instances of macular or roseolar lesions of the ears. The duration of the skin lesions varied widely, ranging from two and eight days in the case of the macules to fifty-three days in the case of two large nodules on the outer surface of the hind feet. Most of the skin lesions, however, were healed in an average of twenty-two days. At the end of the experiment, all bone and skin lesions, other than one scrotal chancre, were healed.

The eye lesions consisted of two instances of keratitis developing late in the course of the disease, 115 and 119 days after inoculation, and

TABLE 1.—*Effect of Potassium Iodid on the Manifestations of Syphilitic Infection in Rabbits: Intravenous Administration*

Group No. Rabbit	Right: Primary Orchitis	Right: Scrotal Edema	Right: Peri-orchitis	Right: Epididymis Head	Right: Epididymis Tail	Right: Scrotal Chancre	Left: Metastatic Orchitis	Left: Scrotal Edema	Left: Epididymis Head	Left: Epididymis Tail	Left: Scrotal Chancre	Generalized Lesions	Freedom from All Lesions	Residual Syphilitic Lesions at Necropsy	Grade of Infection
A. 1	26 < 20 h. 82 ++	..	+	35 ++	46 +	.....	81-87 +	...	44 +	....	.....	None.....	7-10	118 None.....	+
2	17 < 7 h. 27 ++	24	+++	35 +	46 ++	39 +++	59 +	...	.....	.....	.....	S. 73, h. 8.....	10	119 None.....	+
3	24-29 < 9 h. 27 +	..	.....	32 +	46 ++	.....	.....	...	.....	46 +	.....	S. 61, h. 42. S. 73, h. 30 S. 80, h. 22. S. 89, h. 14	0	123 Hd. R. epid.	++
4	10-17 < 47 h. 94 ++++	25	++++	35 +++	35 +++	44 ++++	44 +++	...	.....	.....	.....	B. 61, h. 12.....	14	122 None.....	++
5	17-21 < 33 h. 65 ++	29	.....	44 +	44 ++	35 ++	39 +++ Periorchitis ++	49	.....	55 ++	.....	B. 68, Stat. 19..... S. 68, h. 19. S. 68, h. 40 S. 98, h. 10	.. 0	119 Tl. R. epid.	++
6	16 < 35 h. 52 +++	29	+++	32 ++	35 +	32 +++	35 ++	...	46 ++	48 +	.....	S. 59, h. 9. S. 59, h. 9	36	117 None.....	+
B. 1	21 < 18 h. 60 ++	..	+	44 +	35 ++	.....	No left testicle	...	.....	....	.....	None.....	10-20	118 None.....	+
2	24-32 < 11 h. 27 +	..	..	44 +	108 +	58 +	48 +	...	73 +	.....	.....	None.....	0	119 Tl. R. epid. Hd. L. epid.	+
3	29 < 10 h. 15 +	..	+	55 +	44 +	.....	.....	...	.....	.....	.....	S. 55, h. 18. S. 55, h. 18	15	123 None.....	+
4	? 17	..	....	.....	.....	.....	.....	...	.....	.....	.. ....	.....	..	17 Acc. death	
5	21 < 25 h. 52 ++	29	++	35 ++	35 ++	35 +++	44 ++	...	73 +	61 +	.....	B. 61, h. 12..... S. 59, h. 39. S. 68, h. 30 S. 68, h. 30. S. 68, h. 30	15	119 None.....	++
6	17 < 29 h. 56 ++	20	+++	31 +	35 ++	35 ++++	61 +	...	.....	.....	68 ++	E. 111, h. 6.....	0	117 Hd. L. epid. R. chancre L. chancre	+
C. 1	10 < 38 h. 98 ++++	..	.....	28 +++	.....	.....	48 +	...	.....	....	.....	None.....	9	117 None.....	+
2	24 < 37 h. 84 +	..	+++	21 +++	28 +++	52 +++	46 +++ (castrated 88th day)	73	68 +++	.....	83 +	E. 115, h. 0.....	0	119 Hd. R. epid. R. keratitis	+
3	10 < 84 h. 0 ++++	..	+++	28 +++	46 ++	61 ++	46 ++ Periorchitis +	...	.....	....	.....	B. 55, h. 26..... B. 68, h. 16	0	123 R. orchitis R. periorch. Hd. R. epid. R. chancre	++
4	14 < 94 h. 0 ++++	31	++++	28 ++++	32 ++++	55 ++++	44 +++	...	61 +	..... .	89 ++	B. 61, h. 23..... S. 53, h. 53. S. 55, h. 53 S. 73, h. 21. S. 73, h. 21 S. 73, h. 21. S. 73, h. 35 S. 73, h. 35. S. 81, h. 27 S. 89, h. 19 E. 119, h. 0	0	122 R. orchitis R. periorch. Hd. R. epid. L. orchitis L. keratitis	++++
5	10 < 45 h. 63 ++++	24	++++	32 ++	.....	22 ++++	44 +++	51	... ..	..... .	44 +	S. 55, h. 29. S. 61, h. 12 S. 68, h. 5. S. 68, h. 5	14	119 None.....	+++
6	7 < 48 h. 80 +++	..	+	28 +++	41 ++	52 ++	41 +	...	? +	68 +	.....	B 53, h. 20. B. 68, h. 13 S. 55, h. 18. S. 68, h. 13 S. 68, h. 13. S. 73, h. 8 S. 80, h. 2	0	116 Hd. R. epid. Hd. L. epid.	+++

Group A: 18 doses of 0.006 gm. per kilogram; Group B: 19 doses of 0.0003 gm. per kilogram; Group C: untreated controls

Time is given in days and is counted from the day of inoculation except that (1) The figures following < or h. are reckoned from the appearance of the lesion, (2) the period during which no syphilitic lesions were present, as shown in third column from right end, was counted from the end of the experiment

+, slight; ++, fair; +++, moderate; ++++, marked; <, active progression; h., healed; R., right; L., left; Stat., stationary; Acc., accidental; B., bone; S., skin; E., eye; Hd., head; Tl., tail.

four and three days before the conclusion of the experiment, at which time they were still present.

Considering the grade of infections of the control group, as indicated in the last column of Table 1, it is seen that in Rabbit 4 the disease was marked both as regards the primary and metastatic lesions of the genitalia and the number and severity of the generalized lesions, while at the end of the experiment five residual but active syphilitic lesions were present. The disease of Rabbits 5 and 6 has been classified as of moderate severity, because, although the lesions of the genitalia were almost as marked as those of Rabbit 4, there were fewer generalized lesions, and at the conclusion of the experiment there were only two residual lesions in Rabbit 6 and none in Rabbit 5. According to the plan of general classification, it is seen that the disease of the remaining three rabbits was less severe, and we have graded that of Rabbit 3 as fair and that of Rabbits 1 and 2 as comparatively slight.

The infection which developed in the rabbits treated with potassium iodid differed in many respects from that of the untreated controls. In describing the disease of these rabbits, it will be recalled that during the four months of the experiment the animals of Group A received the larger amount of the drug, that is, a total of 0.108 gm. per kilogram, while those of Group B received approximately one twentieth of this quantity, or 0.0057 gm. per kilogram.

The primary orchitis of all treated rabbits developed much more slowly and irregularly than did that of the controls, so that it was difficult to determine by palpation when an orchitis could be said to be present. The incubation periods in different animals varied widely—in Group A, from ten to twenty-nine days, with an average of twenty days; in Group B, from seventeen to thirty-two days, with an average of twenty-three days. These periods are approximately two and two and a half times those of the untreated controls, in which the average incubation period of ten days was easily and clearly recognized. The orchitis which developed in the great majority of the treated animals was much less severe than in the untreated ones. Thus, in five of the six controls, or 83 per cent., it was of a moderate to a well marked grade, but in only two of the eleven treated rabbits, or 18 per cent., was it of a comparable degree. In two rabbits of Group A, Rabbits 4 and 6, a well marked primary orchitis developed, while in the remaining four rabbits it was only of a slight or fair grade. In Group B, none of the five primary lesions [5] approached a well marked grade, but all were

5. Group B ultimately comprised five rabbits, as Rabbit 4 was killed seventeen days after inoculation because of an accidental injury. At this time, no positive diagnosis of a primary lesion could be made. In addition, it should be noted that Rabbit 1 of Group B had no left testis.

analogous to the slight or fair orchitis observed in the four animals of Group A. The type of testicular reaction in the treated rabbits differed from the usual acute or subacute diffuse process associated with an increased tension or resistance of the organ, which is so commonly observed as characteristic of an orchitis produced by a strain of spirochetes in a state of high virulence, and which occurred in five of the six controls of this experiment. The orchitis of the treated rabbits, and particularly those of Group B, tended to be of a nodular proliferative type in which marked induration rather than tension or resistance was a prominent feature. Furthermore, it may be stated here that induration of subsequent lesions of the genitalia, especially of the epididymides, and of a number of the cutaneous lesions as well, was a pronounced feature. The average duration of progressive activity of the testicular lesions in the Group A rabbits was twenty-five days, and healing was complete in all animals on an average of fifty-eight days. In Group B, the figures are considerably smaller—nineteen and forty-two days. These results should be compared with those of the controls, in which the progressive activity of the primary orchitis average fifty-eight days, while the average time of healing of four primary lesions was eighty-one days. A clinical periorchitis developed in four animals of each group; it was more marked in the "high dose" rabbits. At the conclusion of the experiment, no lesion of the testes or tunics could be detected clinically or at necropsy, while in the control group there were two instances of a residual primary orchitis and periorchitis.

The head and tail of the right epididymis (inoculated side) were involved in all animals of both groups—a slightly higher incidence than among the six controls, in which the head was involved in all and the tail in four animals. The incubation period of these lesions, however, in harmony with that of the primary orchitis, was definitely longer than in the controls, that is, approximately a week; but with the animals in Group B, it was two weeks longer in the case of lesions of the tail of the epididymis.

While a metastatic orchitis developed in all the controls, it was never detected in two treated rabbits, one in each group. The average incubation period was again longer than that of the controls, six to nine days; and, although in three of the five controls, 60 per cent., the metastatic orchitis was of a moderate grade, in only one of the eight lesions in the treated animals, 12 per cent., did a comparable process develop. In addition, the metastatic orchitis in the low dose animals was extremely slight in comparison with the high dose group, and this, in turn, was definitely less marked than in the controls. Involvement of the head of the left epididymis occurred in two animals of both treated groups, and of the tail in three rabbits of Group A and in one

of Group B. The average incubation period of these lesions in Group A was seven weeks, while that of Group B was two months. The incidence of involvement of the left epididymis in the control group was slightly less; that is, out of a possible twelve sites, there were four lesions, or 33 per cent., while there were eight corresponding lesions out of a possible eighteen sites in the treated rabbits, or 44 per cent.

The incidence of scrotal involvement was considerably smaller than in the controls; that is, out of a possible twelve scrotal chancres in the control group, eight, or 75 per cent., actually developed, while there were eight of a possible twenty-one, or 38 per cent., among the treated animals. The incidence of chancres of the left scrotum was much higher in the controls, being 50 per cent., and only 10 per cent. in the untreated groups. On the other hand, there was no difference in the chancres themselves among the treated and untreated animals, or between the two treated groups. In Group A, right scrotal chancres developed in four of the six animals in an average of five weeks, and three of these lesions were large; there were no chancres of the left scrotum in this group. In Group B, there were three right and one left scrotal chancre; two of these lesions were large and two were small.

At the end of the experiment, four treated rabbits, or 36 per cent., showed seven residual lesions of the genitalia, as contrasted with eleven residual lesions in four, or 67 per cent., of the controls. In Group A, there were two instances of a right epididymitis; in Group B, one of a right and two of a left epididymitis and two small regressing chancres. In comparing this condition with that of the control group, the difference is striking when the ratio of lesions to the total number of animals is considered, that is, 1.83 per cent. in the controls and 0.63 per cent. in the treated rabbits.

The incidence and character of the generalized lesions of the treated rabbits further emphasize the fact that potassium iodid is capable of therapeutically influencing the course of the experimental infection.

Although five of the six animals in Group A (high dose) developed lesions in remote parts of the body, as was the case in the untreated group, the actual number of lesions was twelve as contrasted with twenty-five in the controls, while there were eight lesions in three of the five rabbits of Group B (low dose), an animal incidence of 60 per cent. In other words, among six untreated rabbits, there were 4.1 secondary lesions per animal; among six "high dose" treated rabbits (Group A) there were two secondary lesions per animal, and among five "low dose" treated rabbits (Group B), there were 1.6 secondary lesions per animal. In Group A, there were two lesions of the bones, ten of the skin and none of the eyes; in Group B, one of the bones, six of the skin and one of the eyes. The time of development of these lesions was approxi-

mately the same as those of the controls; but, on the whole, they were less marked, and their duration was somewhat shorter.

The average time of healing of the five bone lesions in the controls was twenty days. Two of the bone lesions in the treated animals healed in thirteen days, while the third (Group A, Rabbit 5), which involved the right nasal bone, progressed for nineteen days leaving a residual erosion. Healing of the eighteen skin lesions in the control group was accomplished on an average of twenty-two days; and, if the extreme figures of two, eight and fifty-three days required for the healing of the two macular lesions of Rabbit 6 and the two large cutaneous nodules of Rabbit 4 are omitted, the average time of healing of the majority of skin lesions was twenty days. The average time of healing of all skin lesions in the treated animals was also twenty-two days, but the majority were healed in fourteen days. In Group A, there were three of the ten cutaneous nodules which took thirty, forty and forty-two days for healing to occur; while in Group B, two of the six skin lesions were healed in eighteen days, and the remaining four occurring in one animal (Rabbit 5), although comparatively small and indolent, did not completely heal for from thirty to thirty-nine days. Among all the treated animals, however, there were no skin lesions approaching in size or duration those which developed in Rabbit 4 of the control group.

There was one eye lesion, a keratitis, in the eleven treated animals, as contrasted with two among the six controls. It developed 111 days after inoculation and was healed in six days, that is, before the conclusion of the experiment, at which time a keratitis was still present in two of the six untreated animals.

Considering the infection from the point of view of individual rabbits, the most striking fact among the eleven treated animals is that there was not a single instance of a well marked disease. As with the control rabbits, the classification of the general grade of infection is made on the basis of the severity and duration of the primary and metastatic lesions of the genitalia, and on the number and duration of the generalized lesions in other parts of the body. In Group A, the infection of Rabbits 3, 4 and 5 was of a fair grade. The primary and other genital lesions of Rabbit 4 were well marked, but there was only one secondary lesion, and at the conclusion of the experiment all lesions had been healed for two weeks. The genital lesions of Rabbits 3 and 5 were somewhat less marked than those of Rabbit 4, but each animal developed four generalized lesions and each showed a residual epididymitis at the end of the experiment. The infection of Rabbits 1, 2 and 6 was comparatively slight. The primary orchitis of both Rabbits 1 and 2 was of a minor grade, as were also the other genital lesions, with the exception of a scrotal chancre in Rabbit 2, while there were no gener-

alized lesions in Rabbit 1, and only one in Rabbit 2; at the conclusion of the experiment neither animal showed any residual lesions. In Rabbit 6, the primary and other genital lesions were somewhat more marked, and there were two skin lesions, but the animal had been free from all syphilitic lesions for thirty-six days before the end of the experiment.

The infection of four of the five Group C rabbits, Rabbits 1, 2, 3 and 6, was only of a slight grade. The primary orchitis and the metastatic genital lesions of none of these rabbits was of even a moderately severe type, with the exception of one scrotal chancre; there were no secondary lesions in Rabbits 1 and 2, and only one, a keratitis, in Rabbit 6. At the conclusion of the experiment, all lesions of Rabbit 1 had been healed for from two to three weeks; there were two residual genital lesions in Rabbit 2, and three in Rabbit 6. There was one in the group, Rabbit 5, in which the infection was of a fair to moderate grade; the primary and other genital lesions were not marked, with the exception of a scrotal chancre, but there were five secondary lesions, of which four cutaneous nodules lasted longer than the average skin lesions in both the treated and untreated animals. On the other hand, there had been no recognizable syphilitic lesion for fifteen days before the end of the experiment. The infection of this rabbit was almost of a grade comparable to that of Rabbit 5 in the control group, but the primary and metastatic orchitis were less severe and of shorter duration.

COMMENT

The experiment reported shows that under certain conditions potassium iodid is capable of exerting a definite therapeutic effect in experimental syphilis of the rabbit. This has been accomplished by biweekly or weekly intravenous administration, during the four months of the experiment, of small doses of the drug, 0.006 and 0.0003 gm. per kilogram of body weight, amounting to 0.108 gm. per kilogram in one group of animals (Group A), and to 0.0057 gm. per kilogram in the other (Group B).

The significant effect of this procedure was the benign nature of the infection, which was evidenced throughout the course of the disease, beginning with the character of the primary orchitis and continuing with the generalized manifestations. The development of the primary orchitis in the treated animals was extremely slow and irregular and resulted in lesions of a comparatively minor grade. Thus, while the orchitis in five of the six controls was extensive and well marked, there were only two instances among eleven treated rabbits of a comparable lesion. In addition, the average duration of the orchitis was from four to six weeks shorter than in the untreated group. There was, also, a difference

in the primary lesions of the two treated groups in that the process in all of the low dose rabbits (Group B) was of a definitely slighter grade than in the high dose group (Group A), and, in addition, the average time of healing was approximately two weeks shorter. At the conclusion of the experiment, the primary orchitis was healed in all treated animals, but residual lesions of the testes were still present in two controls, or 33 per cent.

The second striking difference in the treated animals is shown in the incidence and character of the metastatic orchitis. This occurred in all the controls, 100 per cent.; but in two of the ten treated animals, 20 per cent., no syphilitic lesion of the uninoculated testis could be diagnosed clinically during the experiment or by gross examination at necropsy. The average incubation period was from six to nine weeks longer than in the controls, and, in addition, comparable lesions of a moderate grade developed in only one of the eight treated animals, 12 per cent., as contrasted with similar lesions in three, or 50 per cent., of the untreated animals. There was also a difference in the metastatic orchitis of the two treated groups. Five of the six rabbits in Group A (high dose) developed a metastatic orchitis of which two were moderate or well marked, and although lesions of the uninoculated testis developed in three of the four rabbits of Group B (low dose), they were all of a slight or minor grade.

In regard to the incidence of involvement of the right and left epididymis and of the tunics of the testes, there was little difference between the treated and untreated groups, but there was a decided difference in incubation period and type of lesion. The development of lesions of the right epididymis (inoculated side) was, on an average, one to three weeks later in both treated groups than in the controls; while, with the left epididymis, this value is reversed in the case of the high dose group, but is approximately the same as the controls in the case of the low dose group. Among a possible twenty-four sites in the control animals (head and tail of the epididymides of six rabbits), there developed fourteen lesions (58 per cent.), of which eight, or 57 per cent., were moderate or well marked; among a corresponding forty-two possible lesions in the eleven treated rabbits, there developed thirty (72 per cent.), of which only two, or 6 per cent., were of a moderate grade. These particular lesions occurred in a high dose animal (Group A, Rabbit 4). There was practically no difference between the two treated groups in regard to the incidence of involvement of the epididymides. At the conclusion of the experiment, two of the Group A animals, 33 per cent., showed residual lesions of the epididymides, and two of the five animals in Group B, 40 per cent., showed three, as contrasted with five similar lesions in four of the controls, or 67 per cent. Relatively

little significance, however, has been attached to the actual incidence of involvement of the testicular tunics and of the epididymides, since lesions of these structures can be explained on the basis of a direct extension of the syphilitic process from the testis, but their incubation period, severity, and duration is of some importance.

The therapeutic effect of potassium iodid was clearly defined in the incidence of lesions of the scrotum. Thus, among a possible twelve chancres in the controls, eight, or 75 per cent., actually developed; while of twenty-one possibilities in the treated animals of both groups, only eight, or 38 per cent., developed. On the other hand, the time of appearance of the chancres among the treated rabbits was two weeks earlier than in the control group in the case of the right scrotum, but approximately the same time in the case of the left, and there was no striking difference in the type or grade of scrotal involvement in the treated and untreated animals. Three of the eight chancres in the control group were of a moderate to marked grade, while comparable lesions occurred in half of the chancres of the treated groups; and at the conclusion of the experiment, one chancre in the controls (15 per cent.) and two (25 per cent.) in the treated rabbits (Group B, Rabbit 6) were still unhealed.

The effect of potassium iodid is further emphasized by the diminished incidence and the character of generalized lesions in remote parts of the body. There were twenty-five such lesions in five of the six controls, an animal incidence of 83 per cent., with an average of five lesions per animal. As a matter of fact, eleven lesions were observed in one rabbit, seven in another and four in a third. In eight of the eleven treated rabbits there were twenty generalized lesions, an animal incidence of 73 per cent., with an average of 2.5 per cent. lesions per animal. The largest number of generalized lesions occurring in any treated rabbit was five; in two others there were four and in the remaining four animals there were one or two lesions. In Group A (high dose), five of the six animals, or 83 per cent., showed generalized lesions, that is the same animal incidence as in the controls; but the actual number of lesions was half as great—twelve as contrasted with twenty-five—while there were but eight lesions in three of the five rabbits comprising Group B (low dose), or an animal incidence of 60 per cent. It is evident, therefore, that as regards the development of secondary manifestations of the disease, potassium iodid is capable of exerting a restraining or an inhibiting influence.

In addition to the foregoing differences of animal incidence and actual number of generalized lesions in the treated rabbits, certain modifications of the lesions themselves were observed, which may be attributed to the action of potassium iodid. While the average incuba-

tion period was no longer than that in the controls, as was the case with the primary orchitis and certain other lesions of the genitalia, the average duration of the bone and the majority of the skin lesions was somewhat shorter. The five bone lesions in the control group were healed in an average of twenty days, while the three bone lesions in the treated groups were healed approximately a week earlier. In the case of the majority of the cutaneous lesions in the untreated rabbits, healing was accomplished in twenty days, but this time was shortened a week in the case of more than half of the skin lesions in the treated animals. There was one animal in each treated group, as there was in the controls, in which regression and healing of cutaneous lesions was longer than in the others (Group A, Rabbit 3; Group B, Rabbit 5). These two animals were evidently the most susceptible or least resistant ones in the treated groups, but generalized manifestations were not as numerous or as extensive as they were in the corresponding least resistant control animal or, as a matter of fact, in a second control animal (Group C, Rabbits 4 and 6).

With regard to eye lesions, only one instance of keratitis developed among eleven treated rabbits, an animal incidence of 9 per cent., as contrasted with two instances of keratitis occurring among six controls, 33 per cent. At the conclusion of the experiment, this lesion had healed; while those of the controls, which had developed approximately a week later, were still present.

A further difference in the disease as manifested by the treated and untreated rabbits, respectively, is shown by the type or variety of generalized lesions. On the basis of extensive experiments it has been shown that the occurrence or nonoccurrence of various manifestations of disease as well as the severity and duration of these manifestations bear a definite relationship to one another and to the resistance of the experimental animal, whether natural or acquired. These relationships must be considered in interpreting the results of therapeutic experiments. From the point of view of the individual animal, severe syphilis develops in rabbits with low resistance, while mild forms of the disease are seen in those whose resistance is high. With infections of average or moderate severity, in which some generalized lesions occur, the resistance of the animal may be designated as intermediate.

Lesions of the eyes occur most frequently in cases of severe syphilis or in animals in which previous lesions have been comparatively slight or of relatively short duration; they rarely occur in animals that show a prompt and vigorous reaction. It may be added that eye lesions are usually terminal events in the manifestations of the disease, and that the most common type is a keratitis. Extensive cutaneous involvement, excluding the cases of malignant syphilis, is usually associated with

minor or no bone lesions, and this condition has been interpreted on the basis that the resistance of the animals, which was sufficiently high following the primary orchitis to prevent the development of bone lesions, was not sufficient to afford protection to the skin. The occurrence of bone lesions, however, indicates that the resistance of the animal is not high at the time of their occurrence. If no cutaneous lesions develop, a subsequent increase in resistance may be assumed to have taken place in association with the preceding course of events.

Among the control rabbits of the experiment, there was one instance of a comparatively severe disease (Rabbit 4). The primary and other genital lesions were marked, and there was only one bone lesion; but the cutaneous involvement was quite extensive (nine lesions), and late in the course of the infection a keratitis developed. The resistance in this case, which was sufficient to protect the animal from the development of severe bone involvement, was insufficient to prevent the occurrence of skin and eye lesions. The infection which developed in Rabbits 5 and 6 was less severe; but on the basis of the primary lesions and the occurrence of four skin lesions in one, and of two bone and five skin lesions in the other, one may say that their resistance was definitely lower than that of the remaining animals of the group. No generalized lesions developed in Rabbit 1; one lesion, a keratitis, occurred in Rabbit 2, and two bone lesions developed in Rabbit 3. In Rabbit 2, the primary orchitis was comparatively slight, and the left testis, in which the orchitis was more severe, was castrated three weeks after the occurrence of the metastatic lesion.

Among the treated rabbits, although the primary reaction to the infection was, in general, slight, the subsequent course of events was contrary to what might have been expected in untreated animals. In the first place, among the eleven animals there were only three bone lesions. One of these, which occurred in a rabbit (Group A, Rabbit 4) with a marked primary orchitis, was the only generalized lesion to develop; the high resistance of this animal was somewhat analogous to that of Rabbit 3 in the control group. The others occurred in two rabbits (Group A, Rabbit 5; Group B, Rabbit 5) with comparatively slight primary lesions, but in which three and four skin lesions also developed. Secondly, although there was a scarcity of bone lesions, there was also only a slight cutaneous involvement. In two rabbits, four lesions developed and in another, three; but in the remaining eight animals there were only five skin lesions, and five rabbits showed none. Finally, there was but a single instance of eye involvement occurring in an animal in which the primary orchitis was not severe and in which no other generalized manifestations had occurred (Group B, Rabbit 6). The resistance of this animal is analogous to that of Rabbit 2 in Group C. It is significant that

of twenty-two possible sites among eleven treated animals, there was only one instance of eye involvement; notwithstanding the fact that the primary reaction was, in general, of a minor grade and that there were four rabbits with no bone or skin lesions, four with very few, and three with only a fair or moderate number. From the point of view of resistance to the infection, therefore, as measured by the incidence and variety of generalized lesions, the animals treated with potassium iodid were more resistant than normal animals.

A general classification of the grade of infection of the rabbits in each group emphasizes the therapeutic effect induced by potassium iodid and at the same time illustrates the difference in resistance of individual animals. The character of the primary and generalized lesions has been taken into account in Table 2.

The differences seen in the control group are similar to those encountered in any series of from five to ten animals, and the proportion

TABLE 2.—*Classification of Grades of Infection*

Grade of Infection	Group A (High Dose)		Group B (Low Dose)		Group C (Controls)	
Well marked	None	0%	None	0%	Rabbit 4	50%
Moderate	None		None		Rabbits 5, 6	
Fair	Rabbits 3, 4, 5	100%	Rabbit 5	100%	Rabbit 3	50%
Slight	Rabbits 1, 2, 6		Rabbits 1, 2, 3, 4		Rabbits 1, 2	

of animals with high, low, or intermediate degrees of resistance is relatively constant, being, roughly, 1 : 1 : 3, respectively. While the severity of syphilitic infection varies from time to time, owing to a variety of causes, the gradation in the severity of the disease remains relatively constant.

In contrast to the picture presented by the control rabbits, it is seen that the infection of the treated rabbits was much less severe, as in none of them did a moderate or well marked disease develop that was comparable to that observed in half the controls. The disease of the treated animals was similar, in many respects, to that which developed in untreated rabbits with slight or fair manifestations of the disease, or, in other words, the more resistant animals. It would appear, therefore, that the effect of the drug was such as to enable the animal to prevent the occurrence of severe manifestations of disease, to curb the progress of the infection more promptly, and, in general, to exercise a more effective control over the evolution of the disease than is ordinarily the case. Under the conditions of this experiment, in which small doses of the drug were given at biweekly or weekly intervals for four months, the therapeutic effect was evident from the beginning of the primary

lesions through the period of two to three months after inoculation during which secondary manifestations usually develop. The drug so administered did not exert an absolute curative action in regard to the development of either primary or secondary lesions; but, on the other hand, the lesions which did develop were less severe, less numerous and of shorter duration than was the case in similarly infected but untreated animals, and from this point of view the drug induced a distinct prophylactic effect. On the whole, the disease which developed in the rabbits treated with smaller doses was of a more minor character than that seen in the animals treated with larger amounts, which is further suggestive that the effect of the drug was one of stimulation or reinforcement of the host's mechanism of reaction or defense.

CONCLUSIONS

The regular administration at biweekly and weekly intervals of small doses of potassium iodid (0.006 and 0.0003 gm. per kilogram) to rabbits infected with *Spirochaeta pallida* has resulted in modifying the severity and in shortening the duration of the experimental disease as measured both by the character of the primary orchitis and of the general manifestations. The disease which developed in the rabbits treated with iodid resembles in many ways that of normal rabbits of relatively high resistance in which few or no secondary lesions arise.

It is suggested that the therapeutic action of potassium iodid in experimental syphilis of the rabbit is associated with a stimulation or a reinforcement of the host's mechanism of reaction or defense.

ERYTHREDEMA POLYNEURITIS

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Within the last decade, attention has been directed to a peculiar disease of the nervous system occurring in infants and young children, characterized by cutaneous manifestations of pathognomonic importance. This disease has been variously designated acrodynia, erythredema, the pink disease, dermatopolyneuritis and chiropodalgia, all terms descriptive of the symptomatology of a unique syndrome, the identity and pathogenesis of which has but recently been established, though the etiology is still obscure.

It is perhaps unfortunate that the name acrodynia has found current usage for this disease, acrodynia signifying pain in the extremities and having been introduced as a designation for an acute epidemic disease of one hundred years ago that in some respects resembles the condition at present under consideration. Acrodynia was first described by Chardon in 1830, after the disease had occurred in epidemic form in Paris in 1828, attacking about 40,000 people, a few years after the first influenza pandemic. Previous to the first French reports, several German writers described an epidemic convulsive disease of similar symptomatology to the Parisian disease, under diagnoses of Kornstaube, morbus cerealis and Krampfsucht. They appeared to consider it an unusual form of pellagra. Alibert described acrodynia in 1835 in his "Monographie des dermatoses" as a dermatitis affecting particularly the palms and soles, accompanied by formication, anesthesia, hyperesthesia, stinging and smarting pains and gastro-intestinal disorders and tending to run a chronic course. The skin was described as bright red, deeper red, then brown with subsequent desquamation and pigmentation. Sometimes small papules, pustules and blebs were present and at times paresis or even paralysis of the lower extremities occurred. Alibert called the disorder "epidemic erythema." This epidemic, occurring in adults, chiefly among the poorly nourished inmates of asylums and among soldiers, has been compared to an epidemic of chronic arsenical poisoning observed in England in 1900, and affecting beer drinkers. Petran suggested that the Parisian acrodynia epidemic was possibly also due to arsenical poisoning.

A disease of somewhat similar symptomatology to the French acrodynia, observed, however, only in infants and young children, and not charactertized by occurrence in pronounced epidemic form, by food deficiencies or by intense pigmentation has been described in recent years in Australia as erythredema and in the United States and Canada under

the name of acrodynia. Some observers considered it a new disease, others an uncommon disease that seems to be increasing, but, as is frequently the case with uncommon diseases, it is more likely that the condition has always been among us and merely failed of proper recognition and classification because of lack of published accounts calling attention to its existence. An example of this is McKenzie's [1] paper on acrodynia, published in 1923, concerning three unclassified case reports recorded by him in 1899.

REVIEW OF THE LITERATURE

In 1914, Swift reported fourteen cases of erythredema in infants before the Australasian Medical Congress. A discussion of this paper in the Lancet in 1918 resulted in a brief report of similar cases by Doak.[2] Wood, in reporting forty cases, stated that he had observed the disease in Melbourne during the last thirty years, and that Snowball had previously described it under the term "raw beef hands and feet." Clubbe of Sydney called it "the pink disease." F. P. Weber [3] reported "A Condition Somewhat Resembling Lupus Pernio in a Child" in 1921, and in the following year again reported the same case, bringing up the question of the probability of the condition being an example of pink disease or acrodynia. In 1920, Weston [4] based his paper on "Acrodynia" on a report of eight cases by Bilderbach and Patrick, which had been submitted to him for diagnosis because of his familiarity with pellagra. Byfield [5] reported "A Series of Trophoneuroses Probably Due to Infection" before the Section of Pediatrics of the American Medical Association in 1917, and in 1920 published a paper on the same subject entitled "A Polyneuritic Syndrome Resembling Pellagra—Acrodynia." [6]

The recent observation of three cases of this disease and a study of the literature on the subject form the basis of this presentation. The report of a fourth case has been added since this paper was written.

REPORT OF CASES

CASE 1.—*History.*—J. K., a boy, aged 6 years, was referred by Drs. Overbaugh and Kastner on April 20, 1923. He lived in a rural community not far from the patient in Case 2. His parents had moved to Wisconsin from North Dakota three months previously, at which time the child was in good health. The first symptom, pain referable to the anterior tibial surfaces of both legs, was complained of six weeks before our examination and had been present almost constantly ever since. Shortly after the onset of this pain, the

1. McKenzie, A. F.: Canad. M. A. J. **13**:43 (Jan.) 1923.
2. Doak: Lancet (London) **1**:611, 684, 849, 1918; **1**:871, 1921.
3. Weber, F. P.: Brit. J. Dermat. & Syph. **33**:228, 1921; **34**:111 (April) 1922.
4. Weston, W.: Arch. Pediat. **37**:513 (Sept.) 1920.
5. Byfield: J. A. M. A. **68**:1851, 1917.
6. Byfield: Am. J. Dis. Child. **20**:347 (Nov.) 1920.

child complained of itching and burning sensations in both feet, especially in the soles. These sensations were relieved by rubbing, and the patient was frequently observed in the act of rubbing his toes together. Two weeks later, a diffuse erythematous rash, associated with swelling, appeared on the dorsal surfaces of the hands, and in a few days a similar eruption appeared on the buttocks and outer surfaces of both thighs. A week later small patches of erythema appeared on the dorsal surfaces of the feet, and following this the plantar surfaces showed redness and swelling, preceded by pruritus.

Examination.—When the patient was examined on April 20, he was found lying on his side in a drawn-up position, which he seemed to prefer, and with his face buried in the pillow. He was querulous and whimpered when the skin of the legs or buttocks was touched, no matter how lightly. He had a nervous habit of gnawing his fingers and pulling his hair. Though he shunned the light, there was no actual photophobia. There was no evidence of disease of the gums or teeth. The eruption was most intense on the left buttock near the trochanteric head and appeared as an erythematosquamous, somewhat triangular, patch, with numerous small coin-sized, red and scaly outlying lesions. There were also several small scattered patches on the legs and smaller patches on the dorsal surfaces of the feet. The previously noted marginated erythema with edema were observed on both thighs and hands.

Treatment and Course.—A diagnosis of "acrodynia" was made by Dr. O. H. Foerster, and dietary, hygienic and symptomatic treatments were outlined. The child was not seen again until eight weeks later, at which time the cutaneous lesions and nervous symptoms had almost cleared up, and the patient was in fairly good condition, though suffering from occasional rectal prolapse and complaining of some itching and dryness of the skin in the areas previously affected by the dermatitis.

CASE 2.—*History.*—L. P., a boy, aged 22 months, lived in a rural community and was referred by Dr. Hadley, of Oconomowoc, on Sept. 5, 1923. He weighed 7½ pounds (3.4 kg.) at birth. The parents were in good circumstances; the child had been breast fed until he was 14 months old, and then placed on goat's milk, cereals and orange juice and later on vegetables. The patient had had a purulent otitis media six months previously and a persistent nasal catarrh of indeterminate origin. He developed a pustular and vesicular dermatitis on the fingers and hands, toes and feet, buttocks and abdomen, which reached its height early in August. At this time the child began to wring his hands continually and became increasingly irritable and "touchy." He persistently refused food, and as a result lost considerable weight. Pin worms were found at one time. Head bowed and thighs and legs flexed was a characteristic posture. He would alternately rub his hands or bite his fingers, and he kept his head buried in the pillow. He seemed to obtain some comfort from gentle massage of the legs, though handling the limbs provoked irritation. Early in the development of the disease the fingers and toes were red and swollen, and showed desquamation and pustule formation involving the palms and soles as well as the digits. Insomnia was a prominent symptom and was pronounced until convalescence. The patient was admitted to the Milwaukee Infants' Hospital after a diagnosis of "acrodynia" had been made and after he had been treated, with the cooperation of Dr. A. L. Kastner.

Examination.—The child assumed a frowning expression and became resentful on examination, screaming and struggling and hiding his face. He was fairly well developed, though poorly nourished, and the skin and muscles were

flabby and of poor tone. The patellar reflexes were present, and there were no pathologic reflexes. There was a fine papular dermatitis on the body and extremities, accentuated by secondary ulcerations and excoriations where the child had scratched, as on the buttocks, wrists and scattered areas of the chest, abdomen and extremities. There was an edematous swelling of the fingers and toes, associated with erythema and slight desquamation, and a similar process of lesser degree on the hands and feet, fading out toward the wrists and ankles. There were a few vesicles and pustules on the palms and soles. The face also showed erythematopapular and pustular lesions and an erythema or vasocongestion of the ears and tip of the nose. There were prominent veins on the forehead and abdomen. There was no photophobia, though the pupils were contracted, and a diffuse conjunctivitis and associated blepharitis were present. The gums were inflamed and swollen, the tonsils enlarged and the nasopharynx congested and the site of a catarrhal process. The tongue was coated with a grayish fur. There was no discharge from the ears. The occipital, posterior cervical, axillary and inguinal lymph glands were enlarged and hard. There was a tachycardia. Examination of the lungs was negative except for a few râles. Examination of the abdomen was negative. The erythrocytes ranged between 6,700,000 and 7,200,000 and the hemoglobin from 75 to 90 per cent. The leukocytes varied from 13,300 to 14,1000 with 58 to 78 per cent. polymorphonuclears, 37 to 17 per cent. lymphocytes, 5 per cent. transitionals and 1 per cent. basophils. The urine showed a pronounced acidity and a trace of albumin, but no acetone or diacetic acid. Stool examinations for ova and parasites, nose and throat swabs for diphtheria and the Wassermann blood test were all negative. The temperature ranged between 97 and 102 F. during the first month, and then remained practically normal. There was a loss of weight at first and no gain until the third month in the hospital, following which there was a steady rise from 15½ to 19½ pounds (7 to 9.8 kg.).

Treatment and Course.—The child was placed on a well balanced, highly nutritious diet, but was fed only with the greatest difficulty. By humoring him it was possible to carry out the feedings without resort to gavage, though for a long time he refused food unless fed by a certain nurse, and when she was off duty he could not be induced to eat. He was given sodium bicarbonate by mouth and was bathed several times daily with a bicarbonate solution. A phenolated calamine emulsion was applied to the hands. Phenobarbital was administered without apparent benefit, there being continued insomnia, restlessness, scratching and biting of the hands. Though pinned down, he frequently wriggled out of his clothes and assumed various odd postures in which he would be found in apparent exhaustion. During the fifth week of hospitalization, an upper incisor was found to be loose and was removed without traction and without evidences of local disease. During the sixth week, there was some improvement in the nervous symptoms, and a lessened congestion and swelling of the distal parts of the extremities, with associated increased exfoliation. At this time the tonsils and adenoids were removed by Dr. Tolan, and further progress toward recovery continued without interruption. As the irritability and insomnia disappeared, the child began to play and to take an interest in his surroundings. The assumption of normal behavior was, however, gradual. During the course of recovery, there were occasional exacerbations of the cutaneous and nervous manifestations and several attacks of vomiting of nervous origin. The patient was discharged as cured fifteen weeks after admission to the hospital, and he has remained well.

CASE 3.—*History.*—M. L., a girl, aged 8 months, was seen on April 21, 1923, at the request of Dr. R. M. Hall. The mother being unable to speak English, the history was necessarily brief. The infant weighed 8½ pounds (3.8 kg.) at birth and appeared healthy. She was placed on a diet of cow's milk and cereals before the development of the present disease, and except for a mild eczema when 5 weeks of age, she had been apparently well. The present illness was of three weeks' duration and began with a febrile reaction, gastrointestinal disturbances and a slight cough. There had been anorexia and occasional vomiting, restlessness, crying, insomnia, loss of weight and excessive perspiration. A cutaneous eruption appeared on the trunk and extremities four days before my examination.

Examination.—The child was found in a darkened room, crying and fretful and rubbing her hands. On being taken into a lighted room, she became irritable and could not be quieted for the remainder of my visit. The infant was afebrile, though the clothing was wet with perspiration. The skin was cold and moist to the touch and showed a punctate, miliary, erythematopapular and erythematovesicular eruption, most pronounced on the abdomen and back, but also involving the extremities. The hands and feet were red and swollen and apparently edematous, and examination of them resulted in considerable remonstrance on the part of the patient. The palms and soles showed many tiny vesicopustules containing a milky fluid. A provisional diagnosis of acrodynia was made.

Treatment and Course.—Three days later the child was admitted to the Milwaukee Infants' Hospital in the service of Dr. Hall because the mother, who had found it necessary to fondle the child day and night to keep it quiet, was unable to cope with the situation. At this time the miliaria-like eruption was still present on the body, but the vesicular lesions had dried on the palms and soles, which were desquamating, as were the fingers. There was also a slight desquamation on the body and a macerated condition where the skin was especially moist. Examination revealed enlargement of the occipital, posterior cervical and submaxillary lymph glands, congestion of the throat and tonsils, some obstruction to nasal breathing, bulging of the right ear drum and scattered râles in both lungs. The knee reflexes were present but sluggish; there was a fairly pronounced conjunctivitis but no definite photophobia. Physical examination was otherwise negative. Several cultures of the nose and throat were negative for diphtheria. The urine showed a marked acidity, a moderate amount of albumin and a few casts. The blood count showed 13,500 leukocytes and 6,100,000 erythrocytes, with 85 per cent. hemoglobin and 59 per cent. lymphocytes, 39 per cent. polymorphonuclears and 2 per cent. transitionals. The temperature ranged between 98.6 and 104 F., the high temperature being recorded at the time of a middle ear infection. The weight increased from 11 pounds (5 kg.) on admission to 17.5 pounds (7.9 kg.) on discharge from the hospital. The child was fed on whole milk, potatoes, carrots and spinach, and the feedings had to be forced over a considerable period. There was occasional vomiting. The child scratched her face and legs a great deal and was restless and irritable. Paracentesis of both ear drums afforded relief. The insomnia, restlessness and crying spells grew less; the eruption on the trunk continued for some time, associated with considerable perspiration, and the desquamation of the hands and feet was also slow in disappearing. The child left the hospital in two months in fairly good condition.

CASE 4.—*History.*—Z. L., a girl, aged 11 months, was admitted to the Milwaukee Children's Hospital in the service of Dr. Fellman, on Sept. 11, 1924, where she was

seen in consultation by Dr. O. H. Foerster, who made a diagnosis of polyneuritic erythredema. The infant was normally delivered at term and was breast fed, though recently supplementary feedings of oatmeal, potatoes and orange juice and occasionally cow's milk had been introduced. The mother was nervous and undernourished, and therefore unable to nurse her baby properly. When the infant was 3 months old, an itching eruption was said to have appeared, apparently macular in the beginning, later becoming papular and vesicular; it appeared first on the face, then spread to the shoulders and flexor surfaces of the arms and forearms and became generalized in a short time. The pruritus was productive of considerable scratching with subsequent dermatographism and excoriations, and the papular and vesicular eruption was said to have appeared in various areas following several days of persistent scratching. When the infant was 6 months old, there was a marked change in her demeanor, associated with a failure to gain weight properly. She no longer sat up, smiled or played, but became listless and whiney, nursed poorly, slept poorly and scratched continually.

Examination.—This revealed an undernourished infant with a facial expression of suffering and a characteristic frown and squint suggesting photophobia. The patient feebly resisted the first attempts at examination and then lay limply in her crib, rubbing the sides of her trunk and thighs in a slow, aimless manner and occasionally picking at loose folds of skin. The hands, feet, fingers and toes were swollen, pink, cold and moist and showed some exfoliation, especially on the palms and soles and on several fingers. There was definite edema, but no pitting on pressure, and there was no cyanosis in spite of the coldness and swelling. The bright pink color faded out gradually at the wrists and ankles. The nail on the third finger of the right hand was loosened from its bed. The nose was slightly congested but not cold, and the ears appeared normal. The skin of the trunk was warm but slightly moist and generally pigmented, the diffuse pigmentation of the trunk contrasting sharply with the pink hands and feet. The face, especially the cheeks, showed a maculopapular erythematous dermatitis, the scalp some similar lesions. The trunk and extremities showed an eruption of minute papules, interspersed with macules and the trunk a few superficial miliary pustules. There was pronounced dermatographism on deep stroking. The oral and pharyngeal mucous membranes were congested, the tonsils enlarged. Several teeth had erupted, and the teeth and gums appeared normal. There was a bilateral pustular discharge from the ears, but no tenderness or evidence of inflammation. There was photophobia but no conjunctivitis. There was a generalized adenopathy, especially pronounced in the lateral occipital areas. The chest showed an outward flaring of the ribs and a rachitic rosary; the lungs and heart were normal. The abdomen was normal to palpation. There was no bone or joint tenderness. The muscles were flabby and the overlying skin loose. The patellar reflexes were normal, the pupillary reflexes likewise. Nose and throat cultures were negative for Klebs-Loeffler bacilli, but yielded a mixed infection. The urine and stool examinations were normal.

The blood count was as follows: 5,100,000 erythrocytes, 70 per cent. hemoglobin, 16,600 leukocytes, 77 per cent. polymorphonuclears, 14 per cent. small lymphocytes, 7 per cent. large lymphocytes, 1 per cent. basophils and 1 per cent. eosinophils. The temperature ranged from normal to 99.8 F. The infant was nursed and fed with difficulty, she appeared fretful and slept poorly but cried little. On the day following admission to the hospital, the patient was taken home by her mother, and no further observations have been made.

SYMPTOMATOLOGY

Erythredema polyneuritis is characterized by manifestations of extreme wretchedness and irritability in a child who has a swollen, erythematous condition of the hands and feet and a miliaria type of eruption on the body. Associated symptoms are disordered digestion, muscular asthenia, excessive perspiration, photophobia and occasional disease of the respiratory system. As the earliest manifestation the infant shows a disinclination for the breast or bottle, and the older child a distate for food and resentment at attempts to amuse it, and both have insomnia and are fretful. The outstanding symptoms are those referable to the nervous system.

Nervous Symptoms.—The child will frequently be found in a crouching position, with the extremities flexed on the trunk and the head buried in the pillow or in its mother's arms, as if to shun the light. Sleeplessness, restlessness, fretfulness and whining will be observed, or commented on by the mother, and when the child is handled it will cry as though in pain or withdraw itself as though resentful of examination. The facial expression is one of great worry and concern, rather than of acute suffering, and it is an expression that may be maintained for weeks or even months, the first smile being frequently an indication of approaching convalescence. Dulness and apathy may alternate with the more constant restlessness. Emerson's [7] patient fell asleep while sitting up and once while eating dinner. Byfield observed one patient in whom a comatose condition had led to a diagnosis of epidemic encephalitis, while in another he noted delirium.

The child scratches its trunk and especially its extremities, wrings its hands a great deal, and even bites or gouges its hands or feet, so that extensive ulceration may occur. Ordinary manipulation, especially of the extremities and joints, appears to be painful, but gentle stroking or rubbing seems to soothe. Some babies are kept from constant crying or whining only by continual stroking of the extremities. Wood observed children so worn out by lack of sleep and intolerable cutaneous irritation that they became vicious, biting and scratching their mothers' faces. Pulling of the hair to the extent of a trichotillomania and pulling of the ears frequently have been observed. Hyperesthesia is striking at the onset, at which time the reflexes are frequently exaggerated, later to be diminished or even absent. There may be a diminution or absence of sensibility to pin pricks. The paresthesia of the extremities is of long duration. Doak observed meningismus and cerebral irritation in three cases. Loss of teeth, frequently without evidences of changes in the gums or alveoli, and more rarely loss of nails from the fingers and toes.

7. Emerson: Acrodynia, J. A. M. A. **77**:285 (July 23) 1921.

have been observed in many cases. The muscles become soft and flabby, and their disuse results in a pseudoparalysis. The ability to walk, and even to sit up, is lost early in marked instances of the disease, and the neck muscles sometimes seem unable to support the head. The characteristic bent head and frowning or squinting expression exaggerate the photophobia which may be more apparent than real.

Cutaneous Symptoms.—A week or two after the onset of the disease, there is profuse perspiration followed by a diffuse erythematous rash over the entire trunk and usually also involving the extremities. This eruption has been variously designated morbilliform, scarlatiniform, eczematoid and miliaria-like, and is responsible for the name "pink disease." It is considered by some as the first manifestation of the disease, while by others it has not been observed, having possibly disappeared before the child came under observation. The rash on the trunk, most pronounced on the abdomen and back, consists of discrete miliary follicular papules, vesicles and occasional pustules associated with considerable inflammatory reaction. This eruption shows a tendency to exacerbations and recurrences. Due to the profuse sweating and the rubbing or scratching, there is subsequently considerable maceration of the epidermis and occasionally a secondary impetigo or furunculosis. Byfield has observed bullae on the thorax and proximal portions of the extremities. The buttocks occasionally show an eczematoid dermatitis. Byfield observed deep phlegmon formation in one case, and Weber and Curtin [8] both report extensive cutaneous ulceration and gangrene. Bliss [9] noted a vasomotor "dappling" of the arms and legs, which was later associated with pitting on pressure and a deep maroon discoloration.

The characteristic red, cold and swollen hands and feet are observed at some time during the first few days or weeks of the disease, sometimes coincidently with the miliaria, though more often following it. Wood has observed it as late as the fifth month. The fingers, toes, hands and feet are swollen and cold, but often a bright red rather than the dusky red seen in a passive congestion. The redness is most intense distally and fades out gradually toward the wrists. Although there is edematous swelling, actual pitting of the skin on pressure is usually not observed, which has led to objection to the term "erythredema." The erythema of the feet and hands may be mottled and is, in a short time, associated with the formation of tiny palmar and plantar papules and vesicles, rarely bullae, which on drying show a fine punctate desquamation described as "pin-prick desquamation." Occasionally pustules develop, and sometimes desquamation occurs in large flakes. This

8. Curtin: Pennsylvania M. J. **24**:287 (Feb.) 1921.
9. Bliss, G. L.: Arch. Pediat. **40**:707 (Oct.) 1923.

process involves the fingers and toes as well as the palms and soles, and it sometimes recurs periodically at intervals of several weeks. Due to sensory disturbances, the hands and feet, while in this condition, have been scratched to the point of ulceration, accounting for Clubbe's designation "raw beef hands and feet." In many cases, there have been similar coldness and redness of the ears, cheeks and tip of the nose.

Gastro-Intestinal Symptoms.—One of the first and cardinal symptoms of this illness is loss of appetite, which may be so pronounced as to result in an absolute refusal of food. Diarrhea has occasionally been observed, but usually there is pronounced constipation. There are no evidences of organic disease of the gastro-intestinal tract, and stool examinations usually fail to show faulty digestion. One of our cases and several of McKenzie's gave a history of intestinal worms, but these were not regarded as etiologic factors. Abdominal pain has occasionally been observed, and in some cases vomiting has been a conspicuous symptom. The persistent anorexia leads to pronounced loss of weight, with its attendant wasting and weakness of the muscles, and to occasional starvation acidosis. The abdomen is usually flaccid and retracted. Congestion of the pharynx and buccal cavity or a mild stomatitis is frequently noted, and a severe stomatitis to the point of deep ulceration, necrosis and sloughing of soft and bony tissues has been observed. Two of Patrick's cases showed extensive destruction of the maxillary processes with loss of six and eight teeth, respectively. Proctitis and rectal prolapse has been reported by Zahorsky [10] and also observed by Kastner.

Respiratory Symptoms.—Pathognomonic importance has been attached by some writers to respiratory tract symptoms, and the absence of such symptoms has been recorded by others. In many instances, a nasopharyngeal catarrh has been observed as a prodromal symptom, which persisted until recovery or after disappearance of which recovery was said to have occurred. In many cases, nasopharyngitis has been followed by bronchitis or bronchopneumonia, and the latter condition by death. Paterson and Greenfield [11] have observed that the prodromal "cold" or "influenza" is frequently followed by a quiescent period of from two to four weeks of apparent well-being, following which other manifestations of the disease appear.

Suppurative otitis media, possibly secondary to a nasopharyngeal infection, has not been uncommon. In Weber's case, the nasal septum and the turbinates were almost destroyed as a result of necrosis. Dis-

10. Zahorsky, J.: J. Missouri M. A. **18**:153, 1921; J. Missouri M. A. **19**:296 (July) 1922; J. A. M. A. **79**:1975 (Dec.) 1922; Arch. Pediat. **37**:625, 1922.

11. Paterson, D., and Greenfield, J. G.: Quart. J. Med. **17**:6 (Oct.) 1923.

eased tonsils and adenoids and infection of the accessory nasal sinuses have often been observed, and appropriate surgical treatment has in many instances resulted in prompt improvement.

Cardiovascular Symptoms.—The vasomotor neurosis of the extremities is one of the diagnostic and persistent features, although blood vessel changes apparently do not take place. Organic heart lesions have not been found, but a pronounced tachycardia and thready pulse frequently have been observed. Zahorsky has reported a systolic blood pressure of 120 in one child. Enlargement of the area of cardiac dulness on percussion has been observed.

Genito-Urinary Symptoms.—Polyuria and dysuria and occasionally pyelitis occur. A scanty and acid urine can be accounted for by the profuse perspiration and reduced fluid intake, while the occasional acetone and diacetic acid are apparently due to starvation. Functional disturbances of the sphincters account for some of the urinary symptoms.

Other Symptoms.—The temperature is usually normal or subnormal, but sometimes there are febrile reactions, especially early in the disease. Later exacerbations of fever are probably related to complicating infections.

A general adenopathy has been observed sufficiently often to be considered a diagnostic feature. Zahorsky has reported one case of optic neuritis. The frequent photophobia is sometimes associated with conjunctivitis. One of Curtin's patients lost several fingertips and toes due to ulcerative necrosis and gangrene, while Weber's patient lost the distal portions of the fingers of the right hand. Roentgenograms were found negative by McLean, but in Weber's case they showed imperfect calcification of the phalanges, as is said to occur in lupus pernio.

INCIDENCE

Erythredema polyneuritis appears to be a disease of widespread distribution in the temperate zone, having been observed in different parts of North America, Australia and England. It appears to have increased in frequency since the influenza pandemic in 1918. Most of the American cases originated in rural communities in families among whom poverty or neglect was exceptional. There has been no distinct epidemic or endemic tendency, though some observers found their cases in closely grouped communities, and most of the cases reported in this country have been from the Middle West. A seasonal incidence is questionable, though Byfield observed that half of his cases began during December, January and February. Heredity does not appear to be a factor. The disease usually occurs during the first two years of life, being most commonly observed between the ages of 9 and 18 months, but being recorded as early as 4 months and as late as 4, 5 and 6 years. The condition is fairly evenly distributed between the sexes.

ETIOLOGY

The symptomatology has been explained on the basis of a chronic toxic condition following or coincident with an acute or chronic respiratory infection, and the occasional early febrile reaction supports this view. Early opinions have favored an etiologic relationship to influenza because of the prodromal nasopharyngitis, the occurrence during or immediately following influenza epidemics, and because of the frequency of polyneuritic manifestations following influenza. Byfield quoted a diagnosis of epidemic encephalitis in one case as favoring an influenzal relationship. Paterson and Greenfield, while admitting a suggestive relationship to influenza, believe erythredema polyneuritis to be a separate and distinct disease produced by the toxemia of a microbic infection and have proved that the disease was a peripheral polyneuritis —in two cases, necropsy was performed by them. Byfield favored a diagnosis of postinfluenzal radiculitis or sensory polyneuritis. Virpond [12] obtained a gram-positive diplococcus of slow growth by aseptic aspiration of a lymph node. From this he made vaccines for which he claimed cures in two cases.

Because of the similarity of the disease to pellagra, the possibility of it being a food deficiency disease has been carefully investigated. In most cases, however, there has been a history of normal breast feeding or of a well balanced diet after weaning, and most patients have appeared well developed, though losing weight. In a metabolic study of the two cases of acrodynia, Brown, Courtney and MacLachlan [13] found a lowered or negative nitrogen balance and in one case a lowered base balance. They stated that an inadequate food intake was not an explanation for the abnormally low nitrogen retention, and they decided against the diagnosis of a food deficiency disease.

LABORATORY FINDINGS

Most cases of erythredema polyneuritis have shown a distinct leukocytosis with both absolute and relative increase of polymorphonuclear cells. The leukocyte count has ranged between 6,000 and 40,000 with an average of 25,000, and with the polymorphonuclears ranging from 59 to 72 per cent. The erythrocyte count and hemoglobin have usually been normal or have indicated a secondary anemia. Bilderbach and Zahorsky both reported polycythemia, a condition also observed by us, and Zahorsky records an increased viscosity of the blood. Blood cultures have always remained sterile. The Wassermann reaction is usually negative, though Doak obtained positive reactions in three cases of a small group.

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12. Virpond: Arch. Pediat. **37**:699 (Nov.) 1922.
13. Brown, Alan; Courtney and MacLachlan: Arch. Pediat. **38**:609, 1921

Virpond's findings have been given. Repeated cultural examinations for the organisms of influenza and diphtheria have been negative. Bliss reports mixed cultures of streptococcus, staphylococcus and influenza bacillus from both nose and throat swabs.

The Pirquet and Schick tests have always been negative. Van der Bogert [14] ruled out Vincent's angina in his case, but isolated a hemolytic streptococcus from an abscess of the cheek. Weber cultivated a diphtheroid bacillus from the nasal discharge and from an ulcer of the foot.

The urine has frequently shown acetone and diacetic acid and occasionally albumin; in other respects, there have been no unusual features. Most specimens showed a marked acidity, though in some cases alkaline reactions were constant. Urine cultures have remained sterile.

The spinal fluid has usually been normal, but a positive globulin reaction and a reduction of Fehling's solution have been observed.

Gastric analyses by Byfield failed to show abnormalities.

Weber took a biopsy from the edge of an ulcer on the foot of his patient. Examination showed the corium permeated with lymphocytes, plasma cells and fibroblasts. There were no giant cells or tubercle bacilli.

Australian observers reported negative necropsy findings. Necropsy in one of Byfield's cases showed a spinal cord gliosis about the central canal. The anterior horn cells proximal to the anterior commissure showed poor staining qualities; the dorsal columns were normal. The sciatic nerve showed edema and swelling of the myelin sheath and edema of the connective tissue about the nerve fibers; there was no cellular infiltrate. The same variation in size of the fibers was seen in the posterior roots of the lumbar cord. Edema and swelling of the myelin sheath were also seen in the fibers of the dorsal root and in that portion of the nerve lying between the ganglion and the spinal cord.

Paterson and Greenfield's summary of their necropsy findings are quoted from the text as follows:

> The microscopical changes in the nervous system in the two cases examined were of similar type, but differed in degree. In the first case (Case 1) which came to autopsy the nervous symptoms had begun to improve when the child developed an intussusception and died. In the second case examined post-mortem (Case 111) the patient went steadily downhill and died from generalized tuberculosis. In the latter case, therefore, the changes in the nervous system were seen at their maximum, and proved conclusively that the disease was a polyneuritis affecting particularly the peripheral parts of the nerve-trunks.
>
> Our examination showed considerable myelin destruction in some fibres of the peripheral nerves, increasing in degree and extent on passing to the peripheral parts of the nerves. In the calf muscles (in Case 111) the majority

14. Van der Bogert: Arch. Pediat. **40**:410 (June) 1923.

of the finer nerve-bundles were completely demyelinated, and bundles containing ten to twelve nerve-fibres showed complete demyelination of all but two or three. In the popliteal space, on the other hand, only a small proportion of the fibres of the main nerve-trunks showed myelin degeneration.

In the central nervous system in both cases there was a diffuse increase of small cells in the gray matter, especially in the lumbo-sacral enlargement of the cord. This was more striking in Case 111 than in Case 1, but was obvious in both. The nerve-roots also showed some cellular increase, but very little meningeal or perivascular exudate was found. In addition, there were in Case 111 grave changes of the motor nerve-cells of the ventral horns, particularly in those supplying the distal portions of the limbs. These changes consisted in moderate perinuclear chromatolysis, with eccentricity of the nucleus, and the presence of large vacuoles in the cytoplasm of the cells. This appearance, which is almost always present to a greater or less degree in polyneuritis, probably represents the reaction of the cell-body to degeneration of the peripheral part of the axon.

It was difficult to establish the nature of the cells which gave to the nerve-roots and to the gray matter of the cord the appearance of cellular infiltration. The cells in the nerve-roots were of rather larger size, and tended to be more oval than those in the cord, and appeared to be derived from the nucleated sheath of Schwann; while those in the cord suggested a glial origin rather than lymphocytic invasion. Similarly the great increase of cells in the degenerated calf muscles had, in all probability, arisen from multiplication of sarcolemma nuclei, as a similar appearance is commonly found in the degeneration of muscles which follows lesions of their nerve-supply.

DIAGNOSIS

The diagnosis of erythredema polyneuritis is based on the peculiar syndrome of neurologic, cutaneous and gastro-intestinal manifestations. A typical case, once seen, is not likely to be forgotten, so that atypical cases coming under observation later will always arouse suspicion. Certain other diseases must, however, be ruled out. Pellagra is excluded by the absence in erythredema polyneuritis of dietary deficiencies, lack of a sharp line of demarcation in the skin lesions, lack of pigmentation, the usual absence of pronounced enteritis and the frequency of coincident or preceding respiratory tract infection. In pellagra, there is frequently a pellagra incidence in the locality, and a history of recurrences. Arsenical poisoning can be ruled out by the history and by examination of the urine for arsenic. Trophoneuroses, such as erythromelalgia and acroparesthesia, are excluded on a basis of age, lack of other symptoms of those diseases and the presence of other symptoms of erythredema polyneuritis. Motoneuritis, such as occurs in beriberi, lacks the sensory disturbances characteristic of erythredema polyneuritis and includes evidences of food deficiency. A failure of response to dietary treatment further serves to rule out deficiency diseases such as scurvy, pellagra and beriberi. The lack of sensory disturbances in the motor neuritis of diphtheria and the presence of the Klebs-Loeffler bacilli exclude erythredema. Raynaud's syndrome and scleroderma can be readily eliminated.

The cutaneous diseases requiring exclusion are measles, German measles, scarlet fever, eczema, scabies, miliaria, syphilis, lupus pernio and the toxic erythemas. The infectious exanthems which are suspected in many cases are characterized by abrupt onset with febrile reactions, epidemic incidence and certain symptoms peculiar to those diseases, such as angina, high fever, vomiting and strawberry tongue in scarlet fever; coryza, fever, conjunctivitis and Koplik's spots in measles; marked cervical adenopathy and comparative absence of systemic symptoms in German measles, and, of course, the peculiarities of the eruptions.

The toxic erythemas are characterized by multiform lesions of an evanescent nature, sometimes urticarial and often highly inflammatory. The occasional swellings and joint pains of the fingers and toes and associated vesicular or bullous lesions of erythema multiforme may, however, cause confusion. The intense pruritus with subsequent excoriation may suggest scabies, but the typical lesions of scabies and their localization are absent in erythredema. Infantile eczema is characterized by acute inflammation, vesiculation, exudation and scaling or crusting, and when chronic, by considerable infiltration; it shows a predilection for the face, scalp and flexural surfaces. A mycotic dermatitis of the hands and feet might be closely simulated by the vesicopustular dermatitis of erythredema, but other symptoms of the latter disease would help to determine the diagnosis. The palmar and plantar syphilids would have certain characteristics peculiar to syphilitic eruptions in this location and be associated with other evidences of syphilis, and other symptoms of erythredema would be absent.

Lupus pernio and allied conditions have their counterpart in certain of the vasomotor manifestations of erythredema, but in the latter condition there is a more active vasocongestion and a more acute inflammatory reaction. A miliaria without other symptoms would be readily ruled out, whereas a miliaria type of eruption with associated symptoms of the kind seen in erythredema would favor consideration of the latter disease. The tiny, discrete, follicular papules and vesicles with associated acute inflammation, excessive perspiration and pruritus are suggestive of erythredema.

The frequent presence or precedence of nasopharyngitis, bronchitis or otitis and the occasional development of bronchopneumonia in erythredema emphasizes the need of considering erythredema as possibly having its origin in an infection of the respiratory tract.

TREATMENT

In the treatment of erythredema polyneuritis proper, feeding is of utmost importance. This must be carried out by gavage if persuasion fails. The absence of organic disease of the gastro-intestinal tract

favors forced feeding with a well balanced, highly nutritious diet rich in vitamins. If constipation is not overcome by proper feeding, castor oil is indicated. As an adjunct to the diet, cod liver oil may be administered with benefit. Calcium lactate has been recommended.

Careful and intelligent nursing is of paramount importance and does much toward overcoming restlessness and insomnia. Bromids, chloral and similar sedatives are indicated, but have not met with much favor. Opiates are sometimes useful. Atropin has been recommended for the profuse perspiration, and alkalis when there is acetonuria. Removal of foci of infection in the tonsils and adenoids or elsewhere is indicated and is frequently followed by gratifying results, according to several writers. Virpond's vaccine treatment, having been used in but two cases, requires further investigation.

For the skin, frequent though gentle cleansing and the application of sedative antipruritic emollient preparations are indicated. A phenolated zinc oxid and calamin lotion for the trunk and an emulsion of similar composition for the extremities act favorably. Warm, though light, clothing is indicated, and protection of the hands and feet to prevent scratching. Cardboard splints are sometimes useful. A dusting powder may at times be preferable to a lotion. Exposure to sunshine in the open air is desirable. The treatment demands both medical and nursing skill and probably can be best carried out in an infants' or children's hospital.

PROGNOSIS

The prognosis in most cases is satisfactory for recovery, though the course of the disease is protracted, being usually from two to eight months and sometimes longer. Provided that proper care and nursing attention can be given the child, recovery is to be expected in the absence of complications. When the leukocyte count dropped following removal of infectious foci, Byfield was inclined to prognosticate a rapid recovery. Wood and Cole reported five deaths in ninety-one cases, four of which were due to bronchopneumonia and one to a cardiac condition. Byfield reported four deaths in seventeen cases, one from a complicating deep phlegmon, one from advanced tuberculosis and the others apparently from inanition and pneumonia. Paterson and Greenfield reported a death from miliary tuberculosis and Brown two deaths from bronchopneumonia. Zahorsky reported a death from septicemia originating in a severe ulcer of the tongue.

CONCLUSIONS

Erythredema polyneuritis appears to be an entity of infectious origin peculiar to infants and young children. The toxemia caused by this infection produces a sensory polyneuritis, chiefly peripheral, with chronic

inflammatory changes in the spinal cord and nerve roots, resulting in that peculiar syndrome characterized by insomnia, anorexia, cutaneous irritability, vasomotor and trophic disturbances and dermatitis. The disease is further characterized by gradual development and protracted course with a tendency to relapses, and under favorable nursing attention, forced feeding, and removal of infectious foci, it usually terminates in recovery. That it may be an influenzal or postinfluenzal polyneuritis must be considered. A similarity, but not an identity with acrodynia, is to be recognized, and the name "erythredema polyneuritis," suggested by Paterson and Greenfield, seems most fitting in that it retains the descriptive term "erythredema" first used by Swift, and further indicates the pathologic characteristics first defined by Byfield.

NOTE.—Since the writing of this article, Dr. John Butler has presented a paper on this subject before the Section on Dermatology and Syphilology of the American Medical Association in June, 1924. In his case, a biopsy was taken from the palm, and the chief features of the histologic examination were a marked hyperkeratosis of the epidermis and a pronounced edema of the collagen with a moderate lymphocytic and fibroblastic infiltrate. The pronounced hyperkeratosis explains the difficulty of obtaining pitting on pressure, the absence of which has been used as an argument against a designation of erythredema.

LUPUS ERYTHEMATOSUS

A CLINICAL STUDY *

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This condition was described by Biett in 1828 as erythema centrifuge; in 1845, Hebra called it seborrhoea congestiva; and in 1851, Cazenave gave it its present name, lupus erythematosus.

Since its first description, it has been the bane of dermatologists on account of its obscure causation, its resistance to treatment and its tendency to recur.

The superficial resemblance of lupus erythematosus to lupus vulgaris and the accidental accompaniment of tuberculosis in some patients suffering with lupus erythematosus, led many observers to suspect a tuberculous origin for this condition, and the extreme conservatism of medical men has made it difficult for many to get away from this idea, although positive proof of such connection has never been found.

MacLeod,[1] in a most excellent review of its possible causes states:

> I can not help thinking that in a certain number of the cases of lupus erythematosus which were reported to be associated with personal tuberculous stigmas, there was an error of diagnosis from the mistaking of that peculiar superficial symmetrical type of true tuberculosis cutis—described by Leloir as lupus erythematoide—for lupus erythematosus.

The possibility of focal infection other than a tuberculous infection playing a causative rôle has received a great deal of attention in recent years.

The phase of the work that has attracted the most attention was performed by W. H. Barber[2] of London. He reported to the Dermatological Section of the Royal Society of Medicine at the meeting of May 15, 1920, a patient treated with an autogenous streptococcus vaccine from tonsillar infection, and published similar cases in a British journal. He claimed marked improvement in all patients treated with autogenous vaccines.

He claimed that he found a streptococcus in all cases, the site of infection being dental, tonsillar, in the sinuses and in 50 per cent. of all cases examined, intestinal.

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* Read at the meeting of the Clinical Society of the New York Skin and Cancer Hospital, March 28, 1924.

1. MacLeod, J. M. H.: Lupus Erythematosus, Arch. Dermat. & Syph. **9**: 1 (Jan.) 1924.

2. Barber, W. H.: Brit. J. Dermat. & Syph. **27**:365, 1915; ibid, **32**:326, 1919.

The organism was described as growing in long chains, in small colonies; it produced marked acidity in milk, some degree of hemolysis when grown on blood agar, typical growth in nutrient broth, and absolute insolubility of the culture in fresh dilute bile.

Among others reporting cases associated with streptococcic infection were: Scholtz,[3] Cranston Low [4] and Sequeira.[5] Other references would only be a repetition.

The work of Barber, which seemed to offer so much hope to the unfortunate subjects suffering with this extremely disfiguring and obstinate condition, was the reason for undertaking this study.

Only typical cases of the discoid type of the condition were included. Cases in which there was any doubt of the diagnosis were not considered. All patients were examined by the complete staff of the second medical service of the Skin and Cancer Hospital, and several were referred from the services of Drs. J. F. Aitken, H. H. Whitehouse and C. M. Williams.

It was seen early in the work that a simple examination for focal infection did not cover the subject, and it was decided that each patient should have a complete physical examination by an internist. This was done by Dr. R. G. Snyder, and in most of the cases his examination was checked by Dr. J. A. Miller.

The examination of the chest cavity, and in some cases of the abdomen, was supplemented by roentgenograms. These were made by Dr. H. M. Imboden or by Dr. Miller's technician; and in all questionable cases both made the pictures, which were read by both Dr. Imboden and Dr. Miller.

Nose and throat examinations were made by Dr. G. F. Oberrender, and roentgenograms were made to assist him in his examinations. Dr. Oberrender performed the necessary nose and throat operations at the hospital. The dental roentgenography and dental surgery were performed by Dr. Frederick Birnberg. A few patients had their nose and throat and dental surgery performed by their private physicians or dentists.

A Wassermann blood test was made in every case, and at the suggestion of Dr. Miller, a blood complement-fixation test for tuberculosis was also made.

In the complement-fixation test for tuberculosis, both the Wilson and Petroff antigens were used. The results with these were uniform. The skin test for tuberculosis was made on all patients.

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3. Scholtz, Moses: Lupus Erythematosus Actus Disseminatus Hemorrhagicus, Arch. Dermat. & Syph. **6**:466 (Oct.) 1922.

4. Low, C.: Brit. J. Dermat. & Syph. **32**:253, 1920.

5. Sequeira, J. H.: Brit. J. Dermat. & Syph. **33**:298, 1921.

Cultures, so far as possible, were made from the pus of all patients operated on. I might state here that this part of the work was not satisfactory; carelessness in handling resulted in the loss of several cultures, and patients operated on outside the hospital did not bring the cultures back with them.

In six, a biopsy was made for confirmation of the diagnosis and for animal inoculation.

In addition, types of skin disease known to be caused by either a local tuberculous infection or by tubercle bacillary emboli (the so-called tuberculids) were used as checks or controls.

CASES DUE TO LOCAL TUBERCLE INFECTION

Lupus Vulgaris.—Seven patients were examined, one male and six females. Their ages ranged from 12 to 64, and the duration of the disease was from two and one-half to twenty years. In five of these patients, a complete examination as described in the foregoing was made. Four were negative, one showed suspicious changes in both apexes suggesting chronic fibroid tuberculosis. This, however, was not proved by roentgen-ray examination.

The Wassermann blood test was negative in each case.

The blood complement-fixation test for tuberculosis was negative in six cases and postive in only one. This was the patient before mentioned with the suspicious changes in the apexes.

CASES DUE TO TUBERCLE BACILLARY EMBOLI

Eleven patients were examined, four males and seven females. Their ages ranged from 15 to 34, and the duration of the disease was from three months to several years.

These cases were of the following types: Three, papulonecrotic granuloma; two, papulonecrotic granuloma and erythema induratum; one, papulonecrotic granuloma, erythema induratum and synovitis; one, papulonecrotic granuloma and synovitis; two, acnitis; one, papulonecrotic granuloma and lupus vulgaris; one, lichen scrofulosorum.

All of these patients gave a negative Wassermann blood test. Ten gave a positive tuberculous blood complement-fixation test. One gave a negative tuberculous blood complement-fixation test. This patient was a man, aged 25, who had had typical acnitis for three months. In addition to these eleven, one case of scrofuloderma, that of a girl, aged 18, gave a positive blood test for tuberculosis.

Another case, a probable sarcoid of Boeck, also gave a positive reaction on repeated examination. This case was negative on physical examination, but roentgen-ray examination showed suspicious changes in the right lung.

COMPLEMENT FIXATION

Examination of the before mentioned patients gave the following facts:

Lupus vulgaris, which can be caused either by endogenous or exogenous infection, gave a negative blood complement-fixation test for tuberculosis in six cases and a postive test in only one case, or a positive percentage of 14.28. This is not strange when we remember that the infection in the cases giving a negative reaction would have been of the exogenous type, and that the virulence of the organism in skin tuberculosis is not great and that the amount of toxin absorption from the skin is probably entirely too small to cause the development of those substances necessary for complement fixation.

Although tubercle bacilli have been found in the so-called tuberculids by animal inoculation or in sections by Philipson, MacLeod and Ormsby, Leiner and Spieler and others,[6] it is generally accepted that this condition is due to an internal focus of tuberculosis and that from this focus the germs are carried by the blood stream to the skin, where they are destroyed, and their liberated toxins produce the lesions.

Guy [7] has recently reported a seeming association of this condition with enteroptosis and intestinal stasis with subsequent toxemia. A causal relationship such as this needs more proof, and we are still justified in accepting their origin as tuberculous.

The percentage of positive complement-fixation tests in these cases, the tuberculids, was 90.9.

The case of scrofuloderma, referred to in the foregoing, in which the skin was invaded by infection from beneath, also gave a postive test; and if we are permitted to add this to the foregoing, we have eleven positive out of twelve cases, or a percentage of positive reactions of 91.66.

The value of the blood complement-fixation test for tuberculosis has not been definitely determined. Petroff [8] gives positive results as follows: 93.9 per cent. in clinically active cases; 56 per cent. in quiescent cases; 8.5 per cent. in apparently cured cases; 3.8 per cent. in normal persons; 16.6 per cent. in others supposedly nontuberculous.

Advanced cases in which resistance is broken down and immunity destroyed frequently give a negative reaction (personal statement to me by Dr. Miller).

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6. Lewandowsky: Die Tuberculose der Haut, Berlin, Julius Springer, 1916, p. 188.

7. Guy, W. H.: The Etiology of Papulonecrotic Tuberculosis, Arch. Dermat. & Syph. **6**:754 (Dec.) 1923.

8. Petroff, in Todd: Clinical Pathology, Philadelphia, W. B. Saunders Company, 1923, p. 655.

LUPUS ERYTHEMATOSUS

Thirty-six clinic and two private patients were studied. Thirteen were males and twenty-five were females. Their ages were from 17 to 50, and the duration of the disease was from a few (four) months to twenty years, the average duration being approximately five years.

In all patients, the lesions were on the head, the face of course being involved; and in all except one atrophy was present. This was a private patient.

SKIN TESTS FOR TUBERCULOSIS

The intracuticular method was used, 0.1 c.c. of old tuberculin in the following dilutions being given: 0.01, 0.001, 0.0001 and 0.00001. At the same time, for controls 0.1 c.c. of the broth used in making the cultures of the tubercle bacilli from which the tuberculin was made, and 0.1 c.c. of typhoid vaccine were injected into the skin of the other arm. The tests were made on Wednesdays and the readings on Thursdays and Fridays. The reactions varied from simple urticarial wheals one-eighth inch (0.3 c.c.) in diameter to wheals 1½ inches (3.8 c.c.) in diameter with a surrounding erythema. In about 40 per cent. of the cases, the wheals caused by the stronger dilutions showed vesiculation. The duration of the reaction was from one week to twenty days. According to Preiss,[9] this would point to an inactive tuberculous process. He claims that in active tuberculosis the duration of the wheal is less than six days.

It is generally accepted that the value of the skin test when positive is slight; but one patient, a woman, aged 32, gave a negative test with all dilutions. On repeating the test after a few weeks, it was again negative.

The Wassermann test was negative in all cases except one, that of a woman, aged 35, who admitted venereal infection. On account of this infection the case was not included in the list of cases studied. Her blood test for tuberculosis, however, was negative.

ANIMAL INOCULATION

Six patients submitted to a biopsy. Part of the specimen was sent to the laboratory for diagnostic confirmation, and the rest used for animal inoculation. Two of the guinea-pigs died of protein poisoning within forty-eight hours. The others were living ten months later. Skin tests were made on them for tuberculosis, one at five months and one at eight months after inoculation. These tests were negative.

BLOOD COMPLEMENT-FIXATION TEST FOR TUBERCULOSIS

The blood complement-fixation test for tuberculosis was made on thirty of these patients. Of these, twenty-six were negative, four were positive.

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9. Preiss, L.: München. med. Wchnschr. **68**:583 (May 13) 1921.

The four patients whose blood gave a positive reaction showed positive tuberculosis of a latent type as follows: One case, involvement of left apex, diagnosis by roentgen ray; one case, chronic fibroid tuberculosis, diagnosis clinical and roentgen ray; one case, suspicious apical involvement, clinical and roentgen-ray diagnosis; one case, cervical lymph node involvement. The percentage of positive reactions was 13.33. This is 3.3 per cent. less than Petroff gives for persons supposedly nontuberculous.

FOCAL INFECTION

Twenty-six were examined for focal infection; of these, nineteen showed dental infection alone, two showed dental and tonsillar infection, one showed dental, tonsillar and antral infection, one showed dental and nasal infection, one gave a history of pelvic infection, and operation for this was performed at the Wyckoff Heights Hospital, Brooklyn. The hospital records showed that no culture was made, but no evidence of tuberculosis was found.

In two cases, no focus of infection was found. Examination for intestinal infection was not made.

CULTURES

As stated before, this part of the work was not satisfactory.

The following is the result of the cultures made and examined in the hospital laboratory: Five cultures showed streptococci, one being of the hemolytic type; two showed *Staphylococci albi*; one a mixed growth of streptococci and staphylococci; three showed *Staphylococci aurei*; two showed no growth. In no case was an organism found that could be said to resemble the organism described by Barber.

VACCINES

Vaccines were made in all cases in which a positive growth was obtained, and the patients were treated by weekly injections. Three were given a stock vaccine, streptococcus.

RESULT OF THE REMOVAL OF THE FOCI OF INFECTION

Immediately following the removal of the infected foci, there seemed to be a slight improvement. This improvement did not continue except in one case, in which atrophy had not set in. This was a private patient, a man, aged 27, who had the superficial butterfly type of the condition. He showed dental infection, and the condition cleared up entirely in about two months, with no constitutional nor local treatment except the calamine and zinc lotion. No recurrence was seen after eighteen months.

The removal of the infected foci caused no constitutional nor local reaction except in one, a private patient, with severe dental infection, the history of whom is given later.

The vaccine treatment was of absolutely no benefit. The vaccines caused no focal nor constitutional reactions except in the case before mentioned.

REPORT OF CASE

A woman, aged 33, American of German descent, showed extensive involvement of the scalp, face, ears, neck and slight involvement of the shoulders and arms. There seemed to be a tendency for the condition to assume the disseminate type. The lesions had first appeared on the face three years before.

She had severe dental infection, and had twenty-two teeth removed. Following their removal, she suffered from severe local and constitutional reactions.

Culture showed a hemolytic streptococcus. A vaccine was made, and she was given four injections at weekly intervals; the reactions following these were so severe as to necessitate her removal to the hospital. Examination after admission to the hospital disclosed only a streptococcic pyonephrosis and a leukopenia. She rallied after a few weeks and went home, where she died after about two months. The cause of death was probably cerebral hemorrhage. Necropsy was not allowed. The skin condition was not changed.

TREATMENT

All kinds of both local and constitutional treatment that had ever been suggested had in previous years been tried out and discarded as useless, with the exception of radium and carbon dioxid snow.

Radium offers the best means of treating patients with this disease. We believe that fractional doses are of little value; on the contrary, our experience has shown that the dose should be the equivalent of at least two erythema doses, and should be filtered through 2 mm. of rubber and 0.1 mm. of brass. When radium is not available, carbon dioxid snow is a good substitute. When this is used, it should be applied with firm pressure for from one to two minutes, according to the induration of the patch treated.

CONCLUSIONS

1. In early cases of the discoid type, removal of focal infections, before atrophy sets in, together with simple local treatment, seems curative.

2. When atrophy is present, removal of focal infections has no curative value.

3. Removal of focal infections before instituting radical treatment seems to prevent recurrences.

4. Vaccine treatment was of no value.

5. The blood complement-fixation test for tuberculosis seems to be of value in the diagnosis of the tuberculids.

In lupus erythematosus, a negative result is to be expected.

In lupus vulgaris, in which there is no internal focus of tuberculous infection, the result will also be negative.

6. In this study, no relationship of lupus erythematosus to tuberculosis was found, but, on the contrary, any causal relationship seems to have been eliminated.

128 New York Avenue.

CONTRIBUTIONS TO PATHOLOGIC ANATOMY OF SYPHILIS

I. SYPHILIS OF THE AORTA *

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No problem in pathology has caused so much interest, discussion and controversy in the last few decades as the syphilitic affections of the aorta. The pathologic anatomists were foremost among those who endeavored to throw more light on this question.

Ignorance concerning the etiologic agent of syphilis, and the difficulty of morphologic diagnosis postmortem have prevented and delayed the ultimate solution of this problem.

First I shall attempt to present a brief historical survey in order to show with what zeal and with what perseverance the solution was pursued.

The oldest experiences concerned observations and descriptions of the aortic aneurysms. The first fact which the old observers thereby determined was the occurrence of aneurysms of the aorta in comparatively young persons at a time when the changes of aortic intima due to increasing age cannot bring about any serious damages to the aortic tube. Therefore the atheromatous changes of the aorta were even formerly not considered to have any causal connection with the so-called spontaneous aneurysms, since according to the point of view of that time they were thought to represent a senile affection and as such, a condition exclusively and primarily of advanced age. The second important fact was the significant observation that aneurysms of the aorta are found very frequently in syphilitic patients. Thus Welch, fifty years ago, in his studies on the occurrence of aortic aneurysm in the army definitely emphasized that in more than 50 per cent. of such persons syphilis could be proved, and he attempted to establish a syphilitic etiology for this aortic disease.

These and many other observations and studies, however, could not unquestionably prove the connection between syphilis and aneurysmatic disease, and thus the question as to the true cause of the so-called spontaneous aneurysm of the aorta remained unsolved until the close of the last century, in spite of the foregoing correct principles.

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In 1885, the problem of syphilitic affection of the aorta was placed on a more secure basis when Doehle published a masterly treatise on syphilitic aortitis, and pointed to those typical depressions of the intima with attendant wrinkling, which we use at the present time as characteristic features for macroscopic diagnosis of aortic syphilis. The microscopic description in his case showed that a specific granulation tissue developed along the nutrient vessels and mainly destroyed the elastic-muscular layer of the aortic wall, while the intima did not present any atheromatous changes.

This piece of work was of a fundamental nature and pointed out the right path for the later discussions of this topic.

The main difficulty arose from the morphologic differentiation between the changes due to atherosclerosis and those caused by syphilis, which necessitated a precise characterization of these two definite morbid processes.

The merit for the morphologic solution of this question in its principal points through correct and consistent conception belongs to the Kiel school under Hellers' direction.

At the beginning of this century, we see prominent scientists of all countries (Benda, Chiari, Gilbert and Lion, Pierce, and Stanton, etc.) directly and indirectly contributing to this problem through microscopic and experimental work, corroborating and supplementing the findings of the pathologists of the Kiel school.

The morphologic picture of syphilis of the aorta was sketched in all details and carefully described at a time when the inciter of syphilis and the serodiagnosis of this disease were not yet known. This should serve the practitioner as an illustration of the importance of the morphologic studies and how they alone can lead to the final solution.

Two important factors for the proof of the syphilitic etiology of this aortic disease were brought out with the discovery of *Spirochaeta pallida* and the serodiagnosis of syphilis. Several authors (Schmorl, Wright and Richardson, etc.) really were successful in finding the syphilitic inciter in the diseased wall of syphilitic mesaortitis. The many negative results that were obtained by other investigators in similar examinations have had no serious influence on the solution of this question, especially when we consider how painstaking is the search for spirochetes in tertiary syphilitic diseases and how often a positive finding can be ascribed to accidental good fortune.

Wassermann Reaction.—The use of the Wassermann reaction on necropsy material in cases of aortic syphilis proved much more successful and practical. After clinicians had called attention to the frequent occurrence of a positive complement-fixation test in patients with aortic regurgitation, pathologists started to apply the same reaction at

the necropsy table in a great many instances of syphilitic mesaortitis, under the control of nonsyphilitic cases. The results were surprisingly uniform, and in from 94 to 95 per cent. of the cases the reaction proved to be positive. During this year, I had occasion to perform the Wassermann test in sixteen cases of syphilis of the aorta on postmortem material. The result was negative in only one case; 93.7 per cent. were therefore positive reactions. Simultaneously with the Wassermann test, the precipitation reactions of Meinicke and Sachs-Georgi were used for a control, and the results were completely in the affirmative. We observe, therefore, an almost absolute agreement between the biologic reactions and the morphologic findings in a syphilitic body.

The Wassermann reaction serves the pathologic anatomist as an important guide in deciding and proving the correct diagnosis in postmortem examinations of doubtful cases of aortic diseases, especially when a deforming endaortitis conceals and covers up the otherwise typical picture of a syphilitic mesaortitis.

Occurrence in General Paralysis.—The occurrence of syphilis of the aorta in general paralysis, which is essentially a syphilitic disease, was advanced as a further proof for the syphilitic character of this affection. Every experienced pathologic anatomist knows how often these two syphilitic lesions appear simultaneously. In 330 postmortem cases of progressive paralysis, which I compiled from the literature (Alzheimer, Chiari, Gruber, Straub), syphilis of the aorta was present in 73.7 per cent. of the cases.

Characteristics of the Disease.—I shall describe briefly the characteristics of syphilis of the aorta and its differentiation from the atheromatous changes of the same organ.

Syphilis destroys the elastic-muscular layer of the aorta through development of a patchy infiltration which is localized along the vasa vasorum and which partly resembles the picture of a granulation tissue and partly imitates a miliary gumma. Microscopically, one finds all transitions from a simple perivascular small round cell infiltration to a true gummatous formation; namely, areas which show a central necrosis, contain multinuclear giant cells and are surrounded by lymphocytes and plasma cells. Changes of such a character are correctly designated as gummatous aortitis. Interesting also are the endarteritic proliferations which occur in the intramural vessels and are responsible for the circumscribed necrotic areas of the aortic wall. These changes in the media not rarely incite reactive fibrous thickenings of the intimal surface.

In the torpid healing tendency of the syphilitic process, a contracting cicatricial tissue of microscopic and macroscopic size may develop, which

tends to destroy the elastic fibers of the media, and may cause a roughened surface of the aortic intima.

The gross appearance of a fully developed aortic syphilis is typical and can hardly be overlooked even by a less experienced observer. The characteristic reddish, livid depressions in the intima of the aorta, with wrinkling and scarring, the alternating thinness and thickness of the aortic wall, as well as the cicatricial condition, etc., give to the diseased organ a definite appearance, which we now recognize as a specific disease, under the name "syphilitic mesaortitis."

While syphilis attacks, damages and destroys the outer coats, but especially the media of the aorta, the atheromatous process develops in the intima of the vessels. In the latter instance, we encounter two characteristic changes, namely, yellowish stripes and patches with atheroma-like softening, which arise through fatty degeneration of the intimal structures, and which represent one of two components of atherosclerosis. The other factor consists in a fibrous proliferation within the intima layer, with a tendency to hyaline degeneration (sclerosis) and calcification.

The syphilitic affection therefore represents a chronic inflammatory process of specific character localized in the media (mesaortitis), whereas atherosclerosis is a degenerative condition of the intima (endaortitis).

Aside from the peculiarities briefly outlined, both processes show a special predilection in the localization in the aortic tube. Syphilis exclusively affects the ascending portion of the aorta, often ceasing in the arcus, always, however, gradually diminishing in the thoracic part of the aorta and totally disappearing in the plane of the diaphragm. The atheromatous process, on the contrary, begins in the descending portion and increases in the abdominal part of the aorta and in the peripheral vessels in general. Both diseases may occasionally be found at the same time in the proximal portion of the aorta, but even then they are morphologically and etiologically of an entirely different nature and character, and must be discussed separately.

Local Complications.—During the course of development of syphilis of the aorta, there are three principal manifestations which may appear either singly or in combination, and which originate on account of the anatomic localization of the pathologic changes.

Syphilitic lesions often localize sharply above the sinus of Valsalva, sometimes in a girdle-like formation involving the whole circumference of the aortic wall. The direction in which the further extension of the syphilitic process progresses conditions the following fatal complications:

First, the formation of aneurysms, which are principally found in the ascending part of the aorta and which may extend in almost any direc-

tion and may involve smaller or greater portions of the aortic tube. Their development is to be explained in the destruction of the media and its powerful elastic apparatus in the progress of the syphilitic inflammation toward the distal direction of the aorta. The aortic wall, thus weakened and deprived of its elastic structures, begins to yield to the blood pressure, and bulges gradually.

The aneurysm is an ominous complication, since sooner or later it forms a direct or indirect cause of death. The extreme aneurysmal dilatation of the proximal portion of the aorta makes it impossible for the aortic valves to close the left arterial ostium tight, resulting secondarily in an insufficiency.

Two other complications which more often cause death than a ruptured aneurysm develop with the progress of syphilis in a proximal direction, also involving the sinus of Valsalva. When this course is followed, ostia of the two coronary vessels are affected, thereby being brought into the diseased area. The ostium gradually becomes narrowed or totally obliterated with consecutive serious disturbances in the nutrition of the heart muscle.

Not infrequently we thus find that the myocardium, especially at the left side of the heart, is dissected by abundant fibrous and cicatricial tissue, which influences the functions of the heart. I want to call special attention to the formation of fibrous tissue in the muscular septum of the ventricles, which develops not only during the healing stage of gumma (gummatous scar), but also occurs in connection with the aforementioned condition of the coronary arteries as a result of circumscribed myomalacic foci (myomalacic scar). Such scar formation not rarely interrupts the left branch of the conducting system, causing a dissociation in the harmonious work of the heart.

The syphilitic stenosis of the coronary ostium becomes the more fatal when the intima of the corresponding peripheral coronary branches presents an atheromatous condition, thereby preventing the equalizing compensation of the collateral circulation. Occasionally, we may observe a valvelike elevation of cicatricial character at the opening of the coronary ostium, which, under certain conditions, may produce a sudden occlusion of the latter, resulting in instant death.

Such cases may sometimes be of particular importance, especially for the physician rendering an expert opinion, since not infrequently a syphilitic obliteration or stenosis of the coronary ostia may be the only anatomic change noticed in employees who die suddenly while at work, or in cases of sudden death as a result of an apparently insignificant accident.

The third complication of aortic syphilis is due to a secondary involvement of the aortic valves, following the growth of the syphilitic

process from the region of the sinus of Valsalva to the valvular tissue. The aortic leaflets become thickened, tense and shrunken, a morphologic finding which explains anatomically the insufficiency of the valvular apparatus. Syphilitic insufficiency of the aorta is a frequent occurrence in syphilitic mesaortitis, and is often the cause of sudden death in middle-aged persons.

Not uncommon is the presence of small mesaortitic patches at the junction of two leaflets, and in such a case we are able to observe clearly the secondarily resulting affection of the lateral parts of the leaflets. Due to a shrinkage in the valvular tissue, the leaflets may become separated from one another at their points of mutual contact, thereby increasing the anatomic degree of insufficiency. This finding is essentially different, nay, opposite to the one that we meet on the semilunar valves following healed endocarditis. For that reason, a syphilitic insufficiency of the aortic valves is rarely combined with a stenosis at the same ostium.

In diagnosing an aortic regurgitation, the clinician finds the Wassermann test a helpful and reliable guide in deciding whether the disease is of endocarditic, atheromatous or syphilitic origin. However, he must keep in mind the possibility that a syphilitic patient may become affected with a mycotic endocarditis.

Whereas the foregoing briefly outlined dangerous complications of aortic syphilis take place at the beginning of the aorta, at the central stem of the arterial system, the complications of atherosclerosis show a predilection to develop at the distal portion of the aorta and peripheral arterial branches, with formation of hemorrhages, atrophies, shrinkages, indurations, etc., of the tissues and organs.

Syphilis of the aorta leads to an early or sudden death in persons who are in their prime of life. The disease occasionally shows a stationary course in which the formation of scar tissue is pronounced. Sometimes in postmortem examinations we find people of advanced age affected with aortic syphilis; however, in such cases the complications referred to did not develop exactly as described.

All details as well as any statistical data regarding the occurrence of the outlined individual complications have been omitted here, but will be treated exhaustively in a later paper.

SUMMARY

Syphilis of the aorta is a morphologically characteristic disease which is localized in the elastic-muscular layer (mesaortitis) at the most proximal portion of the aorta, and which leads to an aortic insufficiency, occlusion of the coronary arteries and formation of aortic aneurysm.

Syphilis of the aorta plays a dominant part in the pathology of syphilis.

The syphilitic nature of this aortic disease is proved: (1) by the presence of syphilitic histologic lesions (gummatous infiltrations); (2) by the demonstration of *Spirochaeta pallida* in the diseased aortic wall; (3) by the positive reaction of the Wassermann test made on the blood taken during necropsies; (4) by the frequent combination with other syphilitic organic diseases, such as syphilis of the central nervous system (general paralysis, tabes dorsalis, etc.), syphilis of the liver, testes, etc.; (5) by its appearance at a relatively early age, and (6) by its characteristic macroscopic and microscopic localization in the aorta itself, as compared to the localization of atherosclerosis of the same organ.

SPINAL FLUID FINDINGS IN PEMPHIGUS AND IN DERMATITIS HERPETIFORMIS

WITH A NOTE RELATIVE TO THE TREATMENT OF PEMPHIGUS VEGETANS: A PRELIMINARY REPORT

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The frequent fatal outcome of pemphigus and the difficulties often experienced in the treatment of dermatitis herpetiformis make more than welcome any new facts which may shed light on the etiology of these conditions, and thus aid in the attainment of a cure. Within the last several years, a number of contributions have appeared which seem to lend support to some of the hypotheses advanced as explanatory of these dermatoses, and especially of pemphigus.

ETIOLOGY

Let us first briefly consider the definitely known clinical and pathologic facts relative to pemphigus, measure their relative value and then add and weigh the more recent advances. The outstanding clinical feature of all types of pemphigus is the presence of blebs which arise from apparently normal skin, the various types presenting certain differences to be considered presently. In pemphigus vulgaris, the lesions usually appear in successive crops on the cutaneous surface; they quickly develop a pinkish areola due to local secondary infection with pyogenic cocci, and they show but slight tendency for mucous membrane involvement. The lesions show a marked tendency to heal, and the disease is either kept active by new blebs constantly developing, or the patient remains free from lesions either permanently or temporarily. Pemphigus foliaceus may begin as such or may present the characteristics of other dermatoses. The lesions are primarily pustular, and the skin remains abnormal, for the lesions seldom clear up. In pemphigus vegetans, the blebs are similar to those described in pemphigus vulgaris, except for the marked tendency for mucous membrance involvement, for failure of the lesions to heal; but, on the other hand, they present bases which become ulcerated and develop into papillary growths resembling condylomas.

Although constitutional symptoms of varying severity may be present, in all types of pemphigus the really impressive occurrence is the associated and continued prostration which seems to go hand in hand with the progress of the disease.

Mention must also be made and account taken of the frequent association of functional nervous symptoms with pemphigus, especially those incident to and developing as a result of worry, fright, mental fatigue and hysteria. These appear at times to be associated with or to precede all types of pemphigus, the so-called "acute" pemphigus excepted.

PATHOLOGY

The cutaneous pathologic findings of pemphigus do not show any striking changes. They are similar to those found in other cutaneous subacute inflammations, except for a tremendous serous exudation probably due to paralysis and dilatation of the blood vessels, resulting in the formation of blebs which are usually epidermally located. The positive chemiotaxis for the polymorphonuclear leukocytes is not marked, but the increase of eosinophils in both the lesions and the blood are rather frequent.

Not only have pathologic findings of the skin been studied and described, but abnormal changes in the nervous system have also been noted. Leloir described the occurrence of degeneration of the underlying nerve fibers in a case of pemphigus. Jarisch described a grave lesion, situated in the posterior horns of the spinal cord occurring in a patient who died of pemphigus foliaceus. In a case of pemphigus, Ferrero found atrophy of the cells of the posterior horns in the dorsal region; Westberg described changes in the columns of Goll of the cervical region, and Bocchieri found medullary lesions in the gray substance of the posterior horns.

Culture of the blebs of pemphigus has disclosed either the almost unanimous absence of any bacteria or indefinite results. However, frequent secondary contamination with staphylococci has been observed.

Bacillus pyocyaneus, especially the foliaceus type, has been isolated from the blood of patients with pemphigus by various observers, but it is regarded by many as a secondary infecting organism. Little credence has been placed on the observations of Lipschütz, who described the occurrence of several organisms in chronic pemphigus. The organisms he described are *Cytoplasma oviforme* and *Anaplasma liberum.*

The more recent contributions to the etiology of pemphigus include metabolic, pathologic and bacteriologic investigations.

Gawalowski maintains that the clinical picture of pemphigus suggests a serious internal disturbance, probably caused by a disturbance of the internal secretions. In his conception of the cause of pemphigus,

he stresses involvement of the suprarenal—a hyperadrenalinemia being produced—thus exercising a secondary effect on other glands of internal secretion. Various laboratory investigations were undertaken by this author to substantiate his conception of primary suprarenal involvement in pemphigus.

Covey, in a recent publication, gives an elaborate clinical and pathologic report of a case of chronic pemphigus which terminated fatally. The history of this case suggests a chronic infection as the cause of this malady. The patient had a carious tooth extracted, and an accompanying severe pyorrhea was also treated. This was shortly followed by a bullous outbreak over the entire cutaneous surface, the disease lasting for three years, showing remissions during that time, but ultimately terminating fatally. A complete necropsy was performed, and the striking pathologic findings were those found in the spinal cord.

These findings consisted of from ten to twelve small bodies, gray to white, irregularly circular in outline, attached to the dorsal root either close to its origin or along its course as it ran downward. These tumor-like bodies were seen scattered throughout the dorsal and lumbar regions. Microscopically, these bodies consisted of more or less concentric layers of connective tissue with but few nuclei in their center but an abundance at the periphery. A certain amount of degeneration was also found in the cells of the dorsal root ganglion.

As a result of the study of this case and the other observations gathered from the literature, Covey believes that pemphigus is a chronic infection having its origin in the spinal cord, possibly in the dorsal roots or dorsal root ganglions, the blebs on the skin being a manifestation of a trophic disturbance resulting from injury to the sensory nerve supply.

Opposed to the evidence given in the foregoing, that of implication of the spinal cord in pemphigus, record must here be made of the observation recently published by Krauss. In necropsy studies of two cases of chronic pemphigus in which the spinal cord was studied, no pathologic changes were found in the nerve cells, connective tissue cells, blood vessels, roots or meninges in the sections studied at the cervical, thoracic and lumbar levels.

The most painstaking and thorough bacteriologic research in reference to pemphigus has recently been published by Eberson of the Mayo Clinic. He claims to have isolated an organism, *Bacterium pemphigus,* from the blood of a series of seven patients, five with undoubted and two with probable chronic pemphigus. This organism was obtained repeatedly in all stages of the disease. It is described as a "gram-positive, anaerobic nonmotile, ovoid or coccoid in form, resembling a streptobacillus in certain respects, is pathogenic for guinea-pigs and rabbits and

possesses definite toxic properties." This bacterium has not been found in the blood of normal persons nor in the blood of those suffering from other dermatoses. The author was able to reproduce only suggestive pemphigus lesions in some animals and has been able to reisolate the identical organisms from the blood of the infected animals. It is noteworthy to observe that some of the animals in Eberson's experiments showed clinical evidence of injury to the nervous system.

Our investigations have been centered in a study of the spinal fluid in cases of pemphigus. The following is a summary of the work.

REPORT OF CASES

CASE 1.—E. O., aged 48, with a diagnosis of pemphigus vulgaris and a duration of twelve years, recurrent, when seen by one of us (A. S.) had an eruption which consisted of blebs that appeared to arise from apparently normal skin. These blebs were slightly distended and filled with a clear serous fluid. There were no lesions of the mucous membranes, but blebs were scattered in an irregular manner over the skin of the neck, trunk, arms and legs.

Laboratory Studies.—Examination of the urine proved negative; the blood Wassermann test was negative. The spinal fluid studies showed a negative Wassermann reaction both with the Noguchi antigen and the cholesterin antigen. The colloidal gold reaction was normal; the cell count was 15 per cubic millimeter; the globulin test was negative. Culture of the spinal fluid under sterile conditions, using a modified Noguchi culture medium, showed the absence of any organism after a lapse of one week.

CASE 2.—F. R., a woman, aged 51, married, had a condition diagnosed as pemphigus vegetans, which developed several months after a severe financial reverse. Examination of her skin revealed the presence of numerous small and large blebs arising from apparently normal skin, some of which showed the presence of a slight surrounding erythema. Some of these blebs were so large as to contain 15 c.c. of a clear serous fluid. The mouth, tongue and the pharynx, as far as could be seen, presented numerous ulcerated areas with slight exudate indicative of previously existing blebs.

Laboratory Studies.—The urine was negative, except for the presence of a slight amount of albumin. The blood Wassermann test was negative. The spinal fluid study showed the following: The Wassermann and colloidal gold tests were negative; there were 4 cells per cubic millimeter; the globulin test was negative. Culture of the spinal fluid under sterile conditions in a modified Noguchi medium yielded negative findings after six days' incubation.

CASE 3.—A. B., aged 60, had a disease diagnosed as pemphigus vegetans. The clinical picture was that typical of pemphigus vegetans, with mucous membrane involvement and papillomatous vegetating masses in the axillary and inguinal regions. The laboratory findings were as follows: Urinalysis, blood culture and the blood Wassermann test were negative. The spinal fluid showed a positive globulin reaction, 3 cells per cubic millimeter, a positive sugar reduction; the spinal fluid Wassermann test was negative. Culture of spinal fluid in a modified Noguchi medium was negative for any micro-organism after one week's incubation.

COMMENT

It is realized that the material at hand does not permit hard and fast conclusions. However, the infrequency of pemphigus and the usual inability to obtain material for study in such cases, often due to the serious state of health, offers sufficient justification in presenting preliminary impressions relative to the etiology of this disease based on the following data: The pathologic changes found in the spinal cord, especially in its posterior horns and columns; the presence of either globulin or cell increase in the spinal fluid in two out of three cases of pemphigus studied; the absence of any micro-organism in the spinal fluid after culture in a most favorable culture medium; the almost unanimous absence of any bacteria in the lesions of this disease either immediately or soon after their appearance on the skin surface; the appearance of the blebs of pemphigus on apparently healthy skin and the frequent association of some form of nervous shock which often precedes the development of this dermatosis.

As a result of a study of the foregoing data, the hypothesis which we wish to advance and which to us appears most plausible is that pemphigus is a subacuate or chronic toxemia which primarily attacks the central nervous system (the spinal cord), the blebs on the skin surface being the cutaneous expression of this process. While at times this toxemia alone may be concerned, at others a bacterial factor may enter the clinical picture. *Bacillus pemphigus* of Eberson, *Bacillus pyocyaneus* and possibly others act in the rôle of secondary invading organisms of the blood stream, probably devitalizing the patient's resistance and hastening the end. May it not be possible that cases of pemphigus in which recovery occurs or in which the patient enjoys a long interval of freedom from the lesions, in which the constitutional symptoms are mild and in which the prostration is not marked, are those in which there is an absence of secondary infecting organisms?

Since recovery from pemphigus, especially pemphigus vegetans, is a rarity, the report of the case of a patient with pemphigus vegetans under the care of one of us (A. S.), with freedom from symptoms for more than two years, appears worthy of mention. The patient presented a picture typical of pemphigus vegetans. The treatment consisted of intravenous injections of cacodylate of soda, given every other day or three times a week in amounts varying from 5 to 8 grains (3 to 5 gm.) at a dose. The kidneys were watched, and evidence of arsenical poisoning constantly looked for. During the treatment, the patient showed evidences of marked anaphylactic shock at various times, due to this intravenous therapy; when this occurred treatment was discontinued for one week, and than again resumed. In conjunction with this intravenous therapy, massive doses of phenobarbital were given by mouth. It was

a rather strange observation that in the later stage of the patient's illness, when convalescing, complete withdrawal of the phenobarbital would result in the appearance of a few lesions, quickly controlled by a resumption of this drug. This patient has remained free from symptoms in the absence of any medication for more than two years.

R. H. and W. D. Davis [1] reported the use of a coagulating preparation given subcutaneously in amounts varying from 1 to 1.5 c.c., together with intravenous injections of iron and arsenic in varying amounts and with varying frequency. The amounts of arsenic they usually employed varied from 1 grain (0.06 gm.) at the maximum to ½ grain (0.03 gm.) or even less.

Many dermatologists have maintained that there is a close relationship between dermatitis herpetiformis and pemphigus, indeed, some have maintained that they in reality represent variations of the same cutaneous disease. In the course of our investigations, we were able to study the spinal fluid findings of two cases of dermatitis herpetiformis with the following results.

CASE 1.—B., aged 36, had a disease diagnosed as dermatitis herpetiformis, of the vesicular type, of ten years' duration, recurrent. Laboratory studies of the spinal fluid showed a negative spinal Wassermann test; colloidal gold reaction, negative; globulin test, negative and 5 cells per cubic millimeter. Culture of the spinal fluid in a modified Noguchi medium showed only the presence of a contaminating organism—*Bacillus subtilis.*

CASE 2.—A. K., aged 33, had a disease diagnosed as dermatitis herpetiformis, of the papular type, and of one year's duration. Laboratory studies showed that the urine was normal and the blood Wassermann test negative. The blood count showed 9 per cent. of eosinophils. The spinal fluid examination showed a negative Wassermann reaction; the colloidal gold reaction was negative; there were 10 cells per cubic millimeter, and globulin was present.

SUMMARY

No definite conclusions as to the etiology of pemphigus are possible, but it appears justifiable to advance the following hypotheses.

1. Pemphigus is a disease which probably originates in the nervous system. The vast majority of necropsy findings reported seem to show changes in the posterior columns and in the posterior horns. Again, laboratory studies of the spinal fluid show an abnormal increase of cells in the spinal fluid in one case and the presence of globulin in another. In no instance was it possible to cultivate any bacteria from the spinal fluid. Since in tabes, trophic skin changes occur, such as ulcerations, etc., and since pathologic changes of this nervous disease are found in the posterior cord, it is reasonable to suppose that the involvement of the posterior

1. Davis, R. H., and Davis, W. D.: A Contribution to the Treatment of Pemphigus, Arch. Dermat. & Syph. **8**:627 (Nov.) 1923.

columns of the cord in pemphigus can also give rise to trophic changes in the skin, and that the blebs represent such changes.

Is there any skin condition in which there is a definitely established pathology of the posterior horns or columns in association with either vesicles or blebs on the skin surface? Herpes zoster fulfils these requirements. In this dermatosis it has been definitely proved, as a result of necropsy studies, that inflammatory changes of the ganglions of the posterior roots, and of the posterior roots themselves, are to be found. It has also been shown recently that the development of herpes zoster during the course of syphilis may indicate a premature syphilitic meningitis which affects the posterior roots. Cell increase of the spinal fluid may exist prior to the eruption or may coincide with it or follow it by several days. The rather mild changes of the spinal fluid, as compared with the pathologic condition in the spinal cord, speaks for a striking resemblance between the nerve lesions and spinal fluid findings of herpes zoster and pemphigus.

2. The agent probably responsible for the nerve changes in pemphigus is of the nature of a subacute or a chronic toxemia.

3. This hypothesis of the cause of pemphigus appears to be strengthened further by the lesions of the condition appearing on apparently healthy skin, these lesions being free from bacteria when first appearing.

4. *Bacillus pemphigus, Bacillus pyocyaneus* and possibly others may invade the blood stream of patients with pemphigus, produce a secondary septicemia and possibly play an important rôle in the mortality of this disease.

5. From the observations of Davis and Davis, as well as from ours, arsenic, preferably in the form of cacodylate, given intravenously, offers the best mode of treating pemphigus. We also suggest, in addition, the administration of massive doses of phenobarbital by mouth.

It is our hope that the facts here enumerated, and the hypothesis relative to the etiology of pemphigus here advanced, may serve as an aid in giving many years of comfort to those suffering with pemphigus.

A HEAVENLY MEETING

A SEQUEL

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Once introduced into the spirit realm, a mortal finds that bonds have been formed which facilitate subsequent and perhaps even involuntary access to its confines. Only one so uniquely singled out can know this fact, however incredulously it may be received by the uninitiated. Yet a fact it is, or the episode about to be related could not have taken place. Transfer to the serene continent above is usually effected when the terrestrial pilgrim is in the state which mimics death, namely sleep. Then his soul casts off its material vesture and mounts the chariot invisible bound for the fields known as Elysian.

My second visit to our immortal colleagues took place recently one night, while I was at a meeting of the American Dermatological Association. I was worn out with a day of golf and entertainment, into which a scientific session had annoyingly insinuated itself. Candor compels the admission that as I fell asleep I was thinking more of my poor golf than of the equally poor paper I had read that morning. I was comparing my graceless stance with the debonair sinuousness of Jay Schamberg as he addressed the ball, and the last thing I remembered was Schamberg's announcement that the urea nitrogen was 3.75 on the eighth hole, which was a birdie, par being 5.33 for the hyperuricacidemia trophy.

The next sensation of which I was aware was one of rapid ascent, and presently I recognized the familiar topography of Heaven. At its portal stood my old friend Hebra, in a tweed golf suit. His greeting was warm, but he seemed more robust and less scholarly than the last time I had seen him, and his opening remark was to the effect that golf had become the passion of the Celestial Dermatological Society. The meeting, he continued, was being held at the Country Club. In a trice we were at its entrance, and there, swinging from a gatepost, was a sign bearing the legend:

MISSING LINKS
A Golf Club in the Process
of
Evolution

Hebra mentioned that Darwin was president of the Country Club, Huxley vice president, and Paley, now reconciled to both, secretary. They needed no treasurer, as money was taboo in heaven, but they gave the position as an empty honor to Baron Rothschild.

The Celestial Dermatological Society had preempted club and grounds for the meeting, but the club officers were expected at a banquet to be held on the second night of the congress; that is, if one can talk of units of time where time and space exist not, and where the fourth dimension is a commonplace Einsteined in infinity.

We went directly to the meeting, which was to convene on the terrace before the club, but the gathering had not yet been called to order, as Devergie, the chairman, and Willan, the secretary, were playing off the semifinals. The winner would have to meet Kaposi to decide the championship of the year. Devergie and Willan were at that moment on the eighteenth green. Bateman was caddying for Willan. Kaposi was pacing to and fro nervously, and every one was agog. Willan lay on the green in two, and Devergie in three. They had halved all the other holes, and it looked as if the Englishman would win. Willan was away, and the green sloped down from his lie to the hole. His putt was too hard, and rolled. Devergie sank a beauty, getting a four. The best Willan could do was to tie. He was on edge, putted short, and needed a third to hole out. Devergie had won the match by a stroke. His score was 121 to Willan's 122. This may sound like mediocre golf, but it must be remembered that the players were, after all, dermatologists.

One does not get hot or perspire in heaven, so the meeting began without further delay. On earth a meeting is sometimes held up half an hour or so, while an important officer tubs after a crucial game of golf. Then, by the time the executive session is over and a recess taken, the scientific session may be materially abbreviated, which, after all, may not be so much against the interests of science as might be imagined. In any event, nothing like this happens in heaven, save the unforeseen encroachment of a match itself on the program.

Today there was to be a symposium on lepra. Devergie took the chair, announcing that the first speaker would be Moses. A man more than well preserved for his 120 years arose. He had a generous, one might even say a redundant, beard and flashing eyes, and something in him suggested kinship with men like Caesar, Louis XIV and Napoleon, for he gave an inkling of great qualities of leadership. He spoke with a resonant voice, and in measured accents. Some of his conclusions (and for further reference to his article one may turn to Leviticus 13 and 14 and Deuteronomy 24) may be worth repeating:

1. Leviticus 13, 10: . . . And if the rising be white in the skin, and it hath turned the hair white, and there be quick raw flesh in the rising; (Lev. 13, 11) it is an old leprosy.

2. Leviticus 13, 15: The raw flesh is unclean: it is leprosy.

3. Leviticus 13, 25: If the hair in the bright spot be turned white and it be in sight deeper than the skin, it is leprosy.

4. Leviticus 13, 41: And he that hath his hair fallen off from the part of his head toward his face, he is forehead bald; yet is he clean.

5. Leviticus 13, 42: And if there be in the bald head or bald forehead, a white reddish sore; it is leprosy.

Moses concluded with a few modest remarks to the effect that a layman should not so have presumed among such an august body of experts as to hold forth to them in their own field. As he sat down he thanked his audience for their courteous attention.

In a jiffy Hansen was on his feet inquiring whether lepra in Mosaic times was not often confused with syphilis and tuberculosis. He also wanted to know whether Moses had "biopsied" his patients, whether the "Wassermann reaction was positive" and whether "bacteriology had been done" on the cases with reference to acid-fast bacilli in the tissue or nasal secretion.

Paltauf asserted that many of the cases Moses reported were undoubtedly tuberculosis, and Fournier expressed a similar belief regarding syphilis. Hebra thought that in many instances furunculosis should have been diagnosed, and Casenave suggested the probability that frequently the cases were lupus erythematosus or ordinary seborrhea, particularly those with calvites; while in instances in which the hair turned white, especially in patches, the diagnosis of alopecia areata should have been made.

Samuel Johnson, who had been out golfing with Boswell, had dropped in, and with that arrogance and pedantry so characteristic of him turned to Boswell, and in a voice that carried to all, exclaimed: "Sirrah, they may know dermatology, but forsooth they know not English. Think of using the word 'biopsy' as a verb, and ponder the phrase 'doing bacteriology.' It were indeed sufficient to stimulate mirth, were it not a tragic manifestation of philological ignorance. Alas! that the humanities are not the handmaidens of science! Such persons are in the category of those who talk of the palms of the hands and the soles of the feet. Boswell, bring me a pot of tea!"

Nor did Johnson's discourtesy, except as such, seem out of place. As a criticism it was apropos, and the solecisms he inveighed against were in line with saying the "Wasserman reaction was positive," a sin of commission against which Stokes had thundered from the calm solitudes of Minnesota.

Moses seemed upset at the oratory he had provoked, not realizing that forensic extravagance is the very stuff and substance of dermatology. He closed the discussion by stating that the other speakers had undoubtedly richer material and experience to draw on than he, for he could boast of only a single authority to support him.

It is difficult, from a perusal of the Pentateuch, to imagine that Moses might have been guilty of intentional sarcasm, but the effect of

his words certainly conveyed such an impression to his audience. To resort to the modern vernacular, they couldn't laugh that off, and the meeting ended without the paper on chaulmoogra oil which was to have been read by a Central American Indian medicine man of the time of Montezuma.

The spectral assembly appeared impatient of dermatology, so it was decided to run off the championship match between Kaposi and Devergie without further delay. Emulating the earthly attitude, it had become almost impossible to pursue sober science while a decision as to golf supremacy hung in abeyance.

Thus the two final contentants, all keyed up to the moment, approached the first tee, in order to end a situation of intolerable suspense. Kaposi had the honor, and teed up. The carry was about 120 yards across a mass of cumuli and a trap of clear blue to a slightly elevated rolling green. It was a fair mashie shot. Kaposi selected his club, but hooked and landed to the left of the green, just at the edge of a thicket of asphodel. Devergie silently followed, and lay to the pin in one. He got a birdie, and Kaposi took a four. So the game went, Devergie having slightly the edge, a tense gallery of dermatologists following the players.

On the fifteenth fairway there was a little excitement. Kaposi sliced a brassie shot, and his ball ricocheted from a mass of black onyx concealed in the rough, and struck on her left temple the blessed Damozel, who was gathering three lilies. It knocked her tiara of seven stars awry, and Rosetti, never far from her, ran to her aid, moved by the pathos of her expression. He led her to the golden bar of Heaven, over which she leaned until she had recovered. By this contretemp, Kaposi lost a stroke.

It was on this fairway, too, that Devergie landed in a small depression, and did not know how to play out. His caddie, one of Raphael's cherubs, was tired and in a hurry to return to the cloud on which he liked to rest his chin. Devergie asked his advice. Just then Undine was sighted in the offing, and the cherub suggested calling her over to fill the hole with her tears. The casual waters so produced would permit him to lift his ball out, and play it from favorable ground. The trick irritated Kaposi, and he was in poor humor when they started to play the sixteenth.

At the sixteenth, Devergie, who again had the honor, was preparing to drive. He was making a tee, and when the little conical mound of gold dust suited him, he turned to Kaposi and asked amiably, "Isn't my tee a perfect model of the papule of pityriasis rubra pilaris?"

"You mean of lichen ruber acuminatus," snickered Kaposi.

"Pardon, cher monsieur, I mean pityriasis rubra pilaris," rejoined the Frenchman, still suave.

"Jesu-Maria!" roared Kaposi. "There is no such condition."

Hebra and Wilson hastened forward to placate the disputants, but Kaposi was too upset to regain his composure, and threatened to lose by default. To avoid this Wilson suggested that Devergie make his tees steep sided, polygonal, and with a slight central umbilication to cradle the ball, which would surmount it like a follicular plug in a lichen planus papule. This, being neutral, won Kaposi over, so that he took his final defeat amicably, the score being 118 to 126. The cup, an exquisite little chalice of Phoenician glass, was presented to the victor by Hippocrates.

"Devergie," the Greek began, "thou hast fairly gained the trophy. By the gods, thou didst contest keenly and keenly hast thou won. Pallas, sprung from the brow of Zeus, could not have used more wit; nor Phoebus have swung his clubs with greater grace; nor Hephaestos handled them with more vigor. Let us all now retire to feast the victor, and with Dionysus our inspiration, let us indulge in those Olympian libations which cheer and, we hope, inebriate."

As he stepped aside, he stumbled on a golf ball and nearly fell. His face grew ominous. "The condemned imbeciles," he thundered, "may they all go to Hades; and may the tricephalic sentry of the nether realms consume their silly souls with Plutonian flame."

I was standing next to Celsus, talking to him about Kerion, and asked him whether the Athenian often lost his self-control that way. "He does," confided the Roman, sotto voice, "and as a matter of fact, you have heard only a feeble echo of the real Hippocratic oath."

We all promenaded to another terrace set with a marble table and surrounded by nacreous seats covered with some lustrous material. Taking our places, I found myself between Tillbury Fox and Alibert, with Bazin, Hunter and Neumann opposite me. Darwin and Devergie occupied the head of the table, and Huxley and Hebra the foot. Devergie as chairman was toastmaster, and called on Darwin, as president of the club, to make the opening address.

"I arise with diffidence," began the great biologist, "before a group of scientists professing in a field unfamiliar to me. Nevertheless, some things have occurred to me you may permit me to touch upon, for all branches of biology interest me. First, however, I want to congratulate your body on being the one to inaugurate this club in its function as a dual shrine of sport and science. 'Missing Link' is its name, and many are missing, both in knowledge and in golf. As it is a growing organization, we have advisedly called it, for purposes of sales talk, as it were, a 'club in the process of evolution.' Its name, however, is no reflection on its members, nor will it be possible to construe it as such a reflection until the great crop of contemporaneous American funda-

mentalists from Nebraska and the Georgia legislature is garnered. It is questionable, and one might ask the question in Lincoln, Neb., whether one would prefer to be an ass, to being a codescendant with primates of a common ancestor, who had, at least, something human in him.

"But enough of this! I have but few animadversions to direct to dermatology, or rather to some abuses of it by writers not sufficiently grounded in biology. There is a work on the medical and dietetic treatment of cancer entirely out of conformity with knowedge and ascertained fact. It exploits human ignorance, fear and credulity, and for this reason, justly to characterize its author, it should be entitled 'The Decline of Man;' and there are several works and papers exploiting endocrine gland treatment of skin diseases which might well be grouped under the title of 'The Origin of Speciousness.'"

Darwin resumed his seat amidst great applause. Alibert was called on, and made a few remarks about aleppo boil and mycosis. Bazin spoke about erythema induratum, and deplored the American tendency to call it Bazin's disease or "erythema indurata." Tilbury Fox, with infectious mirth, discussed impetigo contagiosa. Neumann, with quick humor to which this narrative can do no justice, touched lightly and rapidly on numerous topics. His target was the tendency, throughout the world, to regard histopathology of the skin as a valuable diagnostic aid. He contended that its study was desirable mainly to stimulate intellectual grasp of skin lesions, and he pointed out that the average description of a microscopic slide, as published in dermatologic reports, was scarcely worth the space it consumed. He also related how the wife of one of his colleagues, who was the daughter of another, was never cured of obstinate psoriasis by her eminent father and husband.

There were several other speeches—one by Paley, advocating fundamentalism, and one by Huxley, satirizing Paley. This was good natured in tone. Hunter held forth on the primary lesion, and discussed reinfection and superinfection, having perused earthly literature that post-dated his decease.

By this time, the celestial viands had been exhausted, and a general discussion of therapy, largely mere banter, took place under the acuminate guidance of Devergie. He suggested that the deliberations be opened with the assemblage's reflections on tar. Hebra came out strong for oleum rusci, and Crocker for liquor carbonis detergens. He said it might not be as good as coal tar, however, for he had been carried away by Charlie White's recent work, "The Boston Tar Baby."

"Of course," asserted Crocker, "tar alone will do no good. You must also study the alimentary tract, particularly in infants, as Charlie White so ably indicates in his other monumental work 'The Stool Pigeon'."

Alibert asked whether coal tar was as good in sycosis as psychanalysis, referred to in Klauder's "Repression and Self-Expression as the Cause of Eczema," or "The Libido in the Stratum Granulosum." Thus the postprandial activities proceeded. From time to time the members shifted their places, so that it was possible for me to hold fragmentary conversations with several of them. Many asked about their colleagues on earth. Mibelli, inspired by the recent accession of nationalism in Italy, was outraged that Stokes was given the chair in the University of Pennsylvania, instead of Sarazen.

"Why," inquired Mibelli, "should such a distinction go to a man who does not play golf?"

Mibelli had just taken up the game, and his right hand was full of calluses and blisters. Every one spoofed him for his playing, and pointed to the lesions on his right hand as evidence of his mediocrity, but Mibelli insisted that they were an atypical form of angiokeratoma. Recklinghausen wanted to know who was responsible for the nonsense talked about his syndrome, and why an idiot with freckles and without fibromas was regarded as suffering with the disease he named. I had no ready answer. Indeed, the same idea had even occurred to me. Boeck asked me why we Americans insisted on pronouncing his name German-wise, instead of "Book." I had no explanation. He also wanted to know when we would stop using the word "sarcoid," which he had renounced just before his death, and substitute the designation "miliary lupoid," which described the condition accurately. Further, he pointed out that a swollen patch of erythematous lupus was not to be confused with his disease. Finsen agreed with him.

At about this moment, Pringle usurped the conversation.

"What do you think of adenoma sebaceum?" he inquired.

When suddenly an interrogatory missile of this sort strikes one, it is difficult to frame an adequate reply, so I quickly assured him that I thought it a nice and strikingly exclusive malady. This point of view evidently appealed to his British conservatism. He was obviously pleased. Suddenly, however, he appeared to be fading.

"You are leaving rather unceremoniously," he declared in a muffled voice.

"So it appears," I admitted. "Can I bear any messages to earth for you?"

"Yes; tell Schamberg he is going to be the golf champion up here some day."

"I hope that will be far off," I said. "In fact, as far off as the discovery of the cause of psoriasis."

Pringle, now just a bone sticking out of a mackerel cloud, called, "Tootaloo, old thing!"

"Pip-pip!" I hallooed back.

URTICARIA SOLARIS

REPORT OF A CASE

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Skin reactions produced by heat, cold, light and actinic rays are commonly encountered. Many types of reactions are described, and many names are used to distinguish these types of reactions. We are familiar with such terms as erythema solare, dermatitis solare, erythema calorica, dermatitis calorica, dermatitis actinica and urticaria solare, which are used to designate the reaction produced by the before-named agents. There has been a tendency to consider these reactions as one and the same; but, on closer study, our attention has been called to the etiologic differences which have been forgotten but which should be kept in mind, since it is on the etiology that the true distinction is made.

From time to time articles have appeared in which attempts have been made to establish, as a clinical entity, the reaction produced by that special ray, whether it be heat, cold, light or actinic. We know now that the light rays can produce reactions which present different clinical pictures, and these are accepted as clinical entities. For example, the light ray can produce the condition known as xeroderma pigmentosum, or it can produce an entirely different condition known as hydroa vacciniforme, yet xeroderma pigmentosum and hydroa vacciniforme are never confused, although they are produced by the same factor, the light ray. From material collected, we also find that the heat, the actinic and the roentgen ray are capable of producing a definite clinical picture; for example, no one doubts the clinical picture of a roentgen-ray dermatitis. Within the last twenty years or more, the reported cases of this peculiar type of reaction caused by the light rays of the sun, whether it be called "dermatitis urticaria" or "erythema solare," have been scant. The most noteworthy of these papers dealing strictly with the urticarial phenomena of this type of reaction have been published by Ward,[1] Ochs [2] and Duke.[3] The latter, in his paper, properly named this reaction urticaria solaris, because it portrays exactly the type of reaction pro-

1. Ward, S. B.: Erythema and Urticaria with a Condition Resembling Angioneurotic Edema, Caused by Exposure to Sun's Rays, New York M. J. **81**:742, 1905.

2. Ochs, B. F.: Case of Urticaria Caused by Sun's Rays, M. Rec. **78**:193, 1910.

3. Duke, W. W.: Urticaria Caused by Light, J. A. M. A. **80**:1835-1838 (June 23) 1923.

duced by the light ray. He further proves that this reaction is caused by visible rays from the violet end of the spectrum. I have observed and report a case that closely simulates the one recorded by Duke, although a different etiology is apparent. At the second annual meeting of the Pittsburgh Dermatological Society, I had the occasion to present this case under the provisional diagnosis of dermatitis calorica. It was then agreed, after a demonstration of the eruption when exposed to the sun's rays, that the eruption was due to the light and not to the heat ray. Following the suggestion of Dr. Max Scheer of New York, and owing to the urticarial reaction, those present accepted the diagnosis of urticaria solaris as being correct.

CASE REPORT

History.—J. H., a man, aged 20, single, consulted me with regard to inability to withstand the sun's heat. The patient stated that during the summer of 1922, after exposure to the sun's rays, while swimming, he developed a hive-like eruption on the part exposed. Other areas of the body exposed showed the same reaction. The condition became so severe that the patient had to wear a covering over the face and hands to prevent the eruption from recurring. The urticarial eruption, varying in size according to the extent of the surface exposed, appeared in from three to five minutes after exposure and lasted from one-half to twelve hours before all traces of reaction disappeared. The patient stated that one year earlier he had an attack of "hives," lasting from three to four months, following a feast of ham and eggs (?). A period of four months elapsed between the subsidence of the "hive" attack and the appearance of the eruption caused by the sun.

The family history revealed that the mother was sensitized to the proteins of tomatoes, strawberries and pork (verified by positive skin tests). The father was subject to hives (scrotal hernia). One sister had acne rosacea. One sister was entirely free from any skin eruption. The past history revealed the usual diseases of childhood and an indefinite history of constipation. Venereal infection was denied.

Physical Examination.—This revealed a pale, anemic, scrofulous appearing man, 5 feet, 7½ inches in height, weighing 115 pounds (52 kg.). The skin of the body was cold and greasy in appearance. The teeth were poor, with moderate pyorrhea. The tonsils were deeply set and atrophic. The lungs revealed a healed tuberculosis in the right apex. The heart was of normal size, and there were no murmurs. The abdomen was negative. The reflexes were negative. The hands and feet showed a glovelike, purplish-red cyanosis, with an associated cold, clammy sensation to the touch. All arteries were palpable in the hands and feet. The hands presented a fairly marked fine, regular tremor. The first impression of the condition of the hands and feet reminded one of Raynaud's disease in an early stage. The inguinal and cervical glands were shotty and irregular. The pulse was soft, regular, of low tension, averaging about 82 beats per minute. The blood pressure was: upright: systolic, 100; diastolic, 52; reclining: systolic, 94; diastolic, 48. A marked Sargent's line was present. The thyroid isthmus was palpable.

Laboratory Findings.—Differential count of the blood showed faintness of staining, no irregularities in cells and a slight increase in the small lympho-

cytes and eosinophils; hemoglobin, 75 per cent.; erythrocytes, 3,960,000; leukocytes, 5,100. Routine urinalysis was negative. The urine was also negative for hematoporphyrin. The blood was negative for hematoporphyrin. The blood Wassermann test was negative. Skin tests for all foods proved negative. The basal metabolism was — 18. The body was exposed to the various light, color and heat apparatus, with the following results: 100 watt lamp, no effect; Cooper-Hewitt Lamp, no effect; 100 watt blue mazda bulb, no effect; 500 watt nitrogen, no effect; 200 watt lamp, no effect; arc (carbon) lamp, 220 volts, no effect; roentgen rays ¼ Holzknecht unit, skin distance, unfiltered, no effect; roentgen rays ¼ Holzknecht unit, skin distance, filtered (1 mm. aluminum), no effect. The rays of sunlight and mercury-quartz light were next passed through plate and colored glass: (*a*) ordinary window glass; (*b*) thick glass (¼ inch [0.6 c.c.] thickness); (*c*) ordinary magnifying lens; (*d*) blue, red, green, yellow, orange and violet glass of ordinary thickness.

No reaction was produced by passing the rays through the various mediums (*a*), (*b*) and (*c*). The rays were then passed through the colored glass mediums (*d*), with no visible reaction apparent. From all heat and light apparatus, including the sun and mercury-quartz light, the patient noticed a slight feeling of heat. The mercury-vapor-quartz lamp was then applied, with no mediums interposed, for thirty seconds at 8 inch (20 cm.) distance at 60 volts with the following results:

From three to five minutes following exposure, the patient complained of burning and smarting, stating it was the same sensation as that produced by the sun. A definite wheal developed according to the size of the area exposed. The wheal was hard; its center was blanched, elevated and surrounded by a heavy areola of redness. The wheal lasted for one-half hour. This was reproduced over different areas of the body; the wheals on the back lasted from eight to twelve hours. Parts of the body were then protected by lead, parchment paper and heavy cloth, with the result shown in Figure 1. The action of the sun was tried when conditions were favorable. The patient's back was purposely exposed for five minutes to the direct rays of the sun. Within ten minutes a sensation similar to the one described in the foregoing was noted, and within twenty minutes after exposure an identical picture to the foregoing one was evident, the reaction being less severe. The abdomen was then exposed with protection to parts and the results shown in Figure 2 occurred, less severe but identical with the reaction in Figure 1.

Assuming that the reaction obtained in our case was due to a local vasomotor stimulation, the following drugs were given to note any effect produced on the reaction caused by either the sun and mercury-quartz light rays, with these results: Pituitary extract (surgical ampule), 6 drops, was hypodermically injected (Armour & Co.). The pulse rate before injection was 86, regular; during injection, 82, regular; after injection, 86, regular. The blood pressure before injection was from 94 to 58; after, from 104 to 66. The reaction from mercury-quartz light was not modified.

Six drops of pituitary extract from the anterior lobe (Burroughs Wellcome & Co.) was injected hypodermically. The pulse rate before the injection was 86, regular; during injection, 84, regular; after injection, 84, regular; injection was painful. Reaction from light was not modified. The blood pressure was not modified.

Six drops of pituitary extract from the posterior lobe was injected hypodermically. The pulse rate before injection was 86; during injection, 84; after

injection, 88. The blood pressure before injection was from 94 to 54; after injection 106 to 66. There was no effect on reaction of light.

Six drops of epinephrin 1:1,000 (Parke, Davis & Co.) was injected hypodermically.

The pulse rate before injection was 86; after injection, 88. Following the hypodermic injection the patient's pulse rapidly increased; two minutes after injection it was 100, and four minutes after injection, 132, with dilation

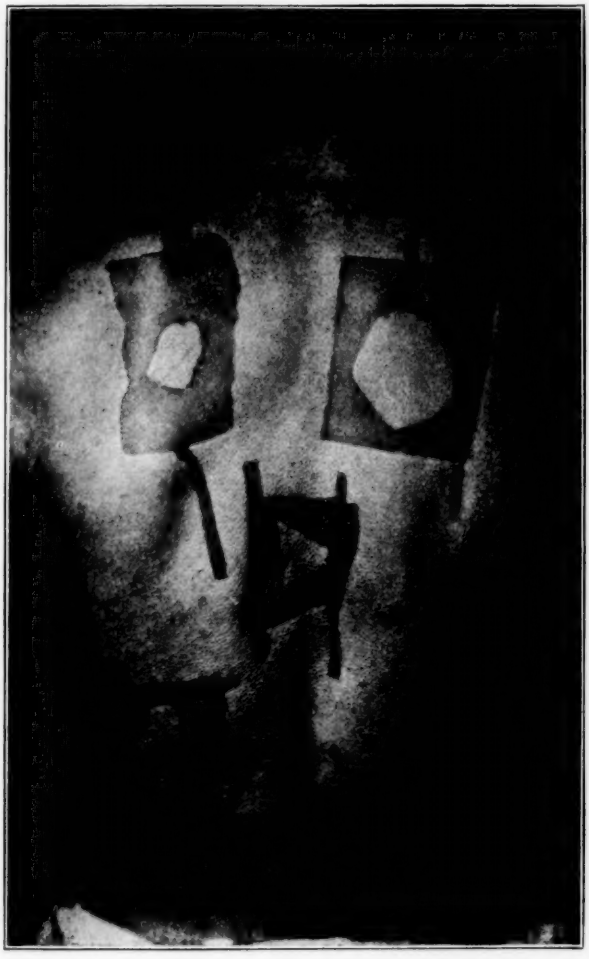

Fig. 1.—Reaction (giant wheal covering entire back) produced by exposure to rays of mercury-quartz lamp. The irregular patterns are normal skin areas so protected to prohibit any reaction. Note individual wheals on normal skin areas.

of pupils, nervousness and gastric distress, and the body skin became very moist and cold. The reaction lasted for six minutes. The reaction of the light was delayed three minutes, and the wheal was much smaller, less infiltrated and far more blanched than it had been previously. The burning

and smarting sensations were practically eliminated. The blood pressure increased with the pulse rate and gradually subsided, being from 115 systolic to 74 diastolic and from 96 systolic to 58 diastolic at the extremes.

Synthetic epinephrin had no effect on the action of the light. The effect of the sunlight after the injection of epinephrin was modified in size, symptoms and severity of the reaction as was that of the mercury-quartz light. Controls were tried with the before-mentioned drugs, and exposures of mercury-quartz and sunlight with negative results. At the suggestion of Dr. W. W. Duke

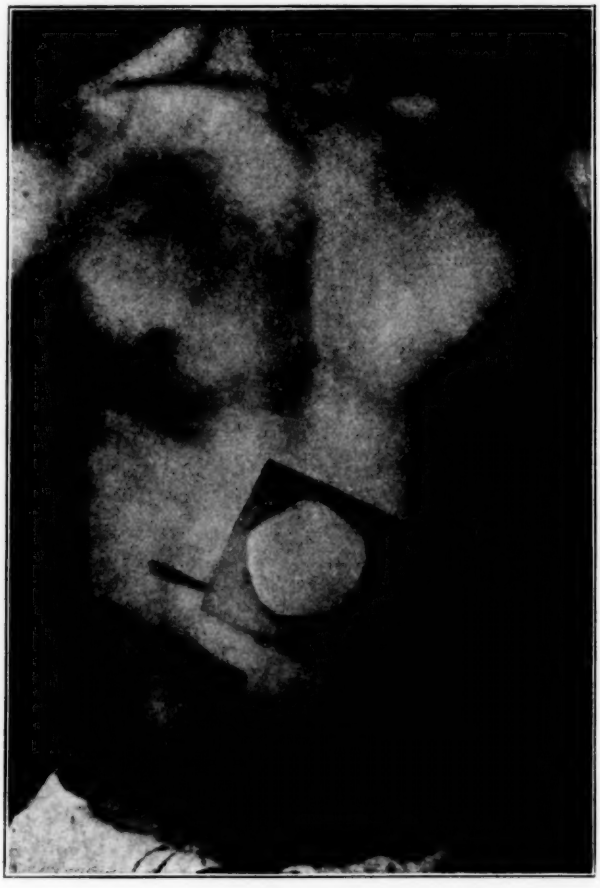

Fig. 2.—Similar to Figure 1. Wheals produced by exposure to the sun's rays. Reaction from sun's rays was milder in type.

of Kansas City, Mo., the ultraviolet rays were passed through a nickel oxid glass (made by Corning Glass Co., Corning, N. Y.). The reaction was identical with the urticarial reaction described in the foregoing. From the information gathered, it appears that the near ultraviolet rays were the effective rays, because the special nickle oxid glass permits only the near ultraviolet rays to filter through and, further, it is stated that near ultraviolet rays are filtered out by any glass regardless of its color. No attempt was made to

test for fluorescent substances in the blood serum, because the patient did not return for further study. No attempt was made to increase the reaction of the rays by giving quinin by mouth or as an injection.

COMMENT

There is no doubt that some invisible factor in the sun's and mercury-quartz light rays is capable of producing the same skin reaction. The reaction manifested itself in the form of an urticarial wheal. It appears that heat and visible color rays were not capable of producing this reaction. Complete filtration or exclusion of all rays by an impermeable substance prohibited any reaction. The filtration of the sun's and mercury-quartz light rays through the usual color mediums allowed no visible reaction. Again, it was evident that filtration through a nickle oxid glass medium allowed the reaction to appear, as did the unfiltered sun or mercury-quartz light rays, both reactions being identical. It is known that ordinary color glass mediums prohibit near ultraviolet rays from passing through; whereas, nickle oxid glass permits only the near ultraviolet rays to pass through. It appears, then, that the reaction is primarily a local one due to some invisible or unknown factor, whether it be the "actinic, chemical or invisible ray." From the results obtained, it must be either the near ultraviolet ray acting directly on the skin, or an indirect action of this ray by some unknown substance in or under the skin. No methods were known to check further a supposed chemical or invisible ray or its action. There is no question that the patient belongs to the so-called "allergic family," since members of his immediate family exhibited reactions of sensitization. It was found from experiments performed that epinephrin hydrochlorid controlled and modified the reaction; hence the phenomenon obtained is probably vasomotor in type. In comparison with Duke's case, it might be said the former patient was affected by the actinic rays, and was sensitive also to the blue ray, whereas the visible blue ray or other color rays had no effect on the patient in the reported case. It is quite possible, then, that we consider this case on an allergeric basis, and not due to a fluorescent substance in the blood or tissues, such as is present in xeroderma pigmentosum or the allied group of reactions. It is not assuming too much to consider this case as one of allergy similar to an egg white or pollen sensitization, related to the before-mentioned group only in that the skin is involved and that the light is indirectly the cause of the reaction. The patient's family was hypersensitive. The father suffered from attacks of "hives," probably due to auto-intoxication caused by the presence of a scrotal hernia. The mother suffered with skin irritation from the ingestion of certain foods, such as tomatoes, strawberries and pork, all of which gave positive skin tests. According to Cooke and

Adkinson,[4] about 48 per cent. of hypersensitive patients show a definite hereditary tendency, which was present in the patient, and which is one of the most important factors to be considered in making the diagnosis of allergy. The history of the patient reveals a definite urticarial reaction, lasting from three to four months, which was produced by a feast of ham and eggs (?). Four months after the subsidence of this attack, the present illness occurred. All possible examinations, except testing for a fluorescent substance in the blood, were made, and proved negative. Owing to the fact that the patient failed to return, I was unable to get the necessary blood or serum to carry out this procedure. This is to be regretted, for it may leave a doubt of the etiologic factor in the mind of the reader. From the data gathered, the near ultraviolet ray was the factor to which the patient was sensitive, and whether it acted directly or indirectly cannot be proved, because no known methods for checking the same were available. If the assumption is not correct, then one must demonstrate a fluorescent substance in the blood or tissues, and this, as before stated, was not possible. If such were possible and positive findings were found, one must then consider this as a case of specific hypersensitiveness, due to a known fluorescent substance, or caused by a "new substance" developed under the influence of a specific fluorescent agent. This, I think, is not the conclusion to be drawn from the case presented.

SUMMARY AND CONCLUSIONS

The case reported is interesting, because it deals with a skin reaction produced by exposure to the sunlight. The reaction was a typical urticarial wheal, which could be duplicated by exposure to the ultraviolet rays of the mercury-quartz lamp. Other efforts to produce this reaction failed, making it evident that some rays from the sun and some rays produced by the mercury-quartz lamp were similar, producing the same reaction. As in other cases reported along similar lines, the patient belonged to an "allergic family." From the data obtained, I feel sure that I am dealing with a specific sensitization of this patient's skin to the near ultraviolet rays.

5026 Jenkins Arcade.

4. Duke, W. W.: Specific Tests in the Diagnosis of Allergy, Arch. Int. Med. **32**:298-312 (Aug.) 1923.

SENSITIZATION TO ADHESIVE PLASTER*

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In June, 1924, Jantzen [1] reported a case of sensitivity to adhesive tape. The report appeared in *The Journal of the American Medical Association* in the section "Queries and Minor Notes." The editor of this department stated that he knew of no similar case, and made the suggestion that the case was perhaps one of vascular disturbance, such as thrombo-angiitis obliterans, Raynaud's disease, epidermolysis bullosa or tight strapping. He further stated: "There appear to be no records of sensitivity to adhesive plaster."

A case is here reported in which such sensitivity is apparently proved.

REPORT OF A CASE

History.—A white woman, aged 49, had had several attacks of hives in childhood. For the last four or five years she had had recurring attacks of asthma. On two or three occasions, following the application of adhesive plaster to the skin, she had had an eruption similar to the one which she showed at examination.

Three days before entering the clinic, the patient burned a small area on the left elbow while cooking. The next morning she covered the area with adhesive tape. About twenty-four hours later, she was troubled with itching and burning, limited to the area covered by the plaster. She did not remove the tape until the following morning, at which time the burning sensation became intolerable.

Examination.—This revealed linear patches of vesicular dermatitis, consisting of small, closely set vesicles on an erythematous base (Fig. 1). Because of the past history and the evident connection between the present condition and the use of adhesive tape, it appeared to us that the dermatitis was due to sensitivity to something in the particular brand of tape that she had used. The patient herself had suspected this and had brought the tape with her. The following experiments were tried, with the hospital adhesive tape as a control.

Four small patches were cut from the patient's tape, and similar patches from the hospital tape. One patch of the patient's tape was applied just above the elbow on the anterior surface of the right arm, and a patch from the hospital plaster was applied just below the joint. Similar applications were made to three other presumably normal persons. At the end of forty-eight hours, all of the

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* Studies, reports and observations from the Dermatological Departments of the Barnard Free Skin and Cancer Hospital and the School of Medicine, Washington University, St. Louis, Mo., U. S. A., service of Drs. M. F. Engman and W. H. Mook.

1. Jantzen, G. H.: Queries and Minor Notes, J. A. M. A. **82**:2070 (June 21) 1924.

Fig. 1.—Vesicular dermatitis, due to sensitivity to adhesive plaster, showing the characteristic configuration.

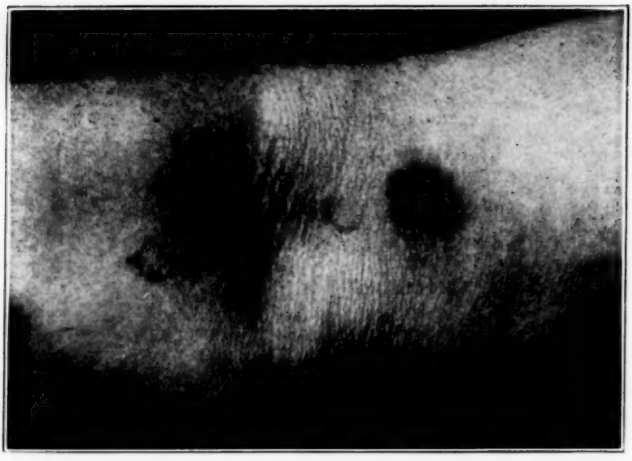

Fig. 2.—Experimental production of vesicular dermatitis, due to sensitivity to adhesive plaster. The negative control with the hospital adhesive plaster is outlined in ink.

patches were removed for observation. The area on the patient's arm covered by her own adhesive plaster showed a dermatitis identical in appearance with the one for which she came to the clinic (Fig. 2). The control below the patient's elbow was negative, as were also all of the controls on the three other persons tested, both with the patient's tape and the hospital tape.

Under soothing applications, the patient was almost immediately relieved of the troublesome burning and pruritus, and in a short time the dermatitis cleared up completely.

COMMENT

In the case reported by Jantzen, both feet had been strapped with adhesive plaster by a chiropodist. The resulting inflammation was marked; there was induration and thickening, and the skin was covered with vesicles of varying sizes. The condition was obstinate and healed slowly, leaving deep, dark brown pigmentation. One denuded area refused to heal. We are unable to find reports of other cases in the available literature.

The remarkable distribution of the eruption in our case, showing the strips of dermatitis crossing each other in the exact lines on which the adhesive tape was applied, seems to be pathognomic of the disease and should make the diagnosis of similar conditions easy. Where large areas are covered with adhesive plaster, the limitation of the dermatitis to the area covered, with perhaps angular or irregular outlines, should cause this condition to be suspected. It can be easily proved by the use of the same adhesive tape as shown in the foregoing, with controls of other manufacture.

DERMATITIS PRODUCED BY THE PORTUGUESE MAN-OF-WAR

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After high tides and tropical storms, the bathers at the beaches of Galveston Island and the neighboring coast often come in contact with the tentacles of the Portuguese Man-of-War floating in the water, with a resulting dermatitis from contact.

The Portuguese Man-of-War is a *Coelentera* belonging to the order of *Siphonophora*. This organism possesses a many colored body that has the appearance of a toy balloon when floating in the water. On closer examination, it has the appearance of a gelatinous mass covered with transparent membranes. From this body, long, retractile tentacles extend, with which prey are attacked. These tentacles, varying in length from a few inches to many feet, contain batteries of stinging capsules. The tentacles of the specimen illustrated in Figure 1 had an average length of 55 inches.

These tentacles float under the surface of the water, and on contact with the skin a dermatitis is produced, varying from a hyperemic line to a linear superficial necrosis. The severity of the dermatitis varies almost in direct proportion to the length of time during which the tentacles are in contact with the skin. To a slight degree, the dermatitis seems to vary with the susceptibility of the individual. Within a season, several scores of patients present themselves, who have developed dermatitis from contact with *Coelentera*. The dermatoses, in some instances, present linear petechial hemorrhages, sometimes associated with an urticarial swelling. Where contact has been instantaneous, the hyperemia may disappear within the course of two or three days. Where contact with the tentacles has been for a few seconds, the hyperemic line may become edematous and raised, and after a period of a few hours become a linear vesicle, varying from an inch to several feet in length. In the severer cases, the fluid distending the vesicle is bloody. Again, a coagulation necrosis may result at the end of from twelve to twenty-four hours, and the lesion is presented as a linear, punched out ulceration, similar to a lesion made by the thermocautery. Frequently the necrosis involves all the layers of the skin, extending well into the corium.

On healing, the lesions leave pigmented striae, which, due to the hemorrhage per diapedesis, remain for a period of weeks and even months. When the necrosis involves the entire rete, the healing may be by scar formation, with resulting long linear scars.

Mayer Bodansky, of the Department of Biological Chemistry, University of Texas, has made some protracted studies on the poisonous properties of the tentacles that produce this dermatitis He submitted the following résumé of his findings:

Extracts of the tentacles injected into pigeons are known to produce somnolence, decreased irritability, a lowering in temperature and finally death due to respiratory paralysis. The application of the tentacles or of their dried preparations to the skin produces a local irritation within twenty to

Fig. 1—Fresh specimen of Portugese Man-of-War (Coelentera, order of Siphonophora) showing body and tentacles which contain batteries of stinging capsules with which prey are attacked.

sixty seconds. Severe injury due to contact with the tentacles of the Portuguese Man-of-War is usually followed by an elevation in temperature. Dried tentacle preparations retain their activity for long periods, one such preparation having been found active after two years. On the other hand, the poisonous properties of the tentacles may be destroyed by heat or by the action of trypsin. This would indicate that the toxic effects may be due, at least in part, to a protein-like substance. In a number of related species of coelenterates, similar physiologic effects are attributed to a so-called "hypnotoxin." This substance is likewise destroyed by heat, is precipitated by alcohol and is nondialyzable.

The case herein described is presented as typical of the dermatitis caused by the Portuguese Man-of-War, as seen in bathers in the Gulf of Mexico, in the vicinity of Galveston.

REPORT OF CASE

Miss H. J., aged 16, while bathing in the gulf came in contact with a Portuguese Man-of-War. The tentacles of the organism wrapped around her

Fig. 2.—Lesions produced on thigh and leg of a young girl, coming in contact with a Portugese Man-of-War (ten days' duration).

thigh and leg momentarily and were immediately kicked off. The time of contact, as estimated by the patient, being only a second or two.

Immediately following contact with the tentacles, the leg and thigh began to burn, and within a few minutes the pain was excruciating. Red lines began to appear. At first they were slightly raised and edematous. Application of a thin paste of sodium bicarbonate, supplemented later by weak

ammonium hydroxid, relieved the intense pain. Continued applications of wet dressings of boric acid were necessary for a period of two days.

After this time, the application of phenolized petrolatum prevented any distressing symptoms. At the end of a week, the patient showed linear lesions some of which were hyperemic lines in which could be seen petechial hemorrhages. Others were long linear blisters filled with a bloody serum.

After three weeks, the patient's recovery was uninterrupted. At the end of three months, the involved areas still presented deeply pigmented lines.

SUMMARY

1. The tentacles of the Portuguese Man-of-War contain an irritant substance capable of producing an acute dermatitis.

2. The dermatitis varies from an urticarial line to a linear coagulation necrosis, varying with time of contact.

3. The acute symptoms of the disease are alleviated by the application of weak antacid solutions.

4. The lesions heal, leaving a hematogenous pigment, which is slowly absorbed. In some instances, healing is followed by permanent scar formation.

STUDIES ON HAIR

WITH SPECIAL REFERENCE TO HYPERTRICHOSIS

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IV. REGIONAL CHARACTERISTICS OF HUMAN HAIR

The hairy regions of the body are covered at one time or another by down of the character already described (Fig. 38). In its typical form, this down is essentially the same as the primary hair of the fetus, and ontogenetically, although probably not phylogenetically, precedes all other types of hair. The tendency, which is widespread among mammals, for hairs to occur in groups is well exemplified by human down in which groups of three are common and groups of five occasional. In these clusters, one hair is almost invariably larger than the others. In view of its central position as well as its size, it is probable that the large hair is produced by the oldest follicle in the group. The significance of these hair groups and their physiologic and probable morphologic relation to sweat glands is a subject that requires much further study.

There is a peculiar tendency for the skin around a hair group, or more often around only two of the hairs, to become invaginated, forming a little pit from which the hairs project, like the fur hairs of *Ornithorhynchus*. This grouping of hairs in pits is most noticeable among the coarser, more easily visible hairs of the arms and legs, from which one might easily get the impression that two hairs frequently arise from the same follicle. Grouping of hairs whose follicles open into a common pit is not to be confused with the appearance produced during replacement when both the old and the new hair may often be seen emerging from the same follicle. Figure 39 shows these two arrangements as seen in a section of the skin of the forearm. It is possible that "conglomerate hairs" and the pathologic condition known as thyrsonothrix may have some relation to this tendency.

THE DOWN (VELLUS)

Owing to its delicacy and the consequent difficulty in studying it, information on human down hair is rather meager. So far as known, it is the same in all races, but the employment of an adequate method of examination might reveal unsuspected differences in its amount or arrangement. Each down hair is said to last about four and one-half months. Later in life, it is more or less reduced through atrophy of follicles, especially in some persons. Whether the loss of down differs

with sex or race is uncertain. A study of this form of hair with reference to the amount of subcutaneous fascia would be of interest, since it has been claimed that in mammals generally phylogenetic increase of subcutaneous fat is accompanied by loss of the small hairs.

In many regions of the body, a considerable amount of down is replaced by the larger terminal hairs and by intermediate forms (Fig. 38). The transition from down to terminal hair is gradual, involving several generations of progressively larger hairs produced by the same

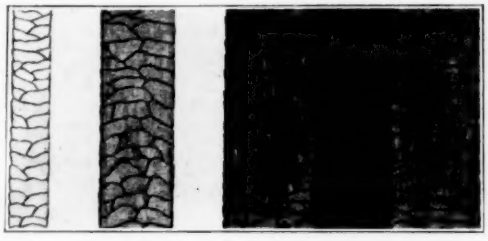

Fig. 38.—Three hairs from the midline of the chest at the level of the fifth rib from a man 38 years old (about ×280). These specimens show the characteristics of down, transitional and terminal hair. The total lengths were 1.6 mm., 15 mm. and 57 mm., respectively.

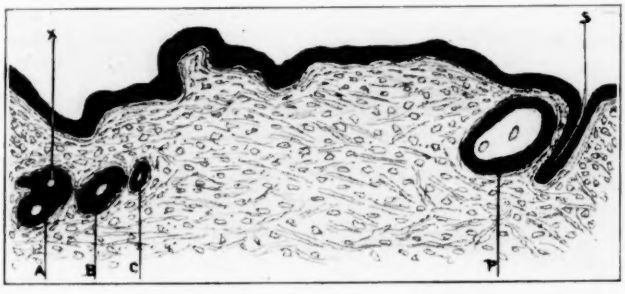

Fig. 39.—Sketch of a section of the forearm of an adult man. On the right is a typical group of three hairs, two of which are from follicles which open into a common pit, *P*. The third hair, *S*, comes from a follicle which reaches the surface. On the left is a similar group but cut at a deeper level. In one follicle, *A*, there are two hairs, one, *X*, is about to fall out, and another which is replacing it. Adjacent sections show that follicles *A* and *B* open into a common pit, while *C* reaches the surface.

follicle, which itself becomes proportionately hypertrophied. Here and there, particularly in borderline zones, an intermediate type of hair may persist for long periods. In a few places, all the down is either lost or replaced by terminal hair, but for the most part only certain follicles change their output, while other follicles all about them continue to produce nothing but down. Why, in the same region, with apparently

identical blood and nerve supply, one follicle should produce a terminal hair and another a down hair is an attractive problem, which may possibly be correlated in some way with the question of the "hair districts" that Toldt believes he can distinguish in the furry mammals, where there is one bristle to several awns, and to each of the latter a number of fur hairs. Closely related to this problem is the question of why some terminal hairs appear early in life and others near by not until many years later. It is also uncertain (in that there seems to be no really conclusive evidence on the point) whether or not the destruction of a terminal hair follicle may cause a neighboring down follicle to hypertrophy and produce a terminal hair to take the place of the one that was lost.

Change from the downy to the terminal form takes place to a greater or less extent throughout life but is most rapid at about the time of puberty. There are marked sexual and indivdual differences in the tendency to produce terminal hair and also well-known racial differences in this respect. In tracing the development of terminal hair, it will be most convenient to consider different parts of the body separately.

HAIR OF THE HEAD (CAPILLUS)

The scalp, as already stated, is one of the first regions to become covered with primary hair. By the time of birth the hairs, which now represent at least the second or third generation, have reached a length of several centimeters. They are still very fine and silky and covered with cuticular scales that suggest those of down, except that they are rather more irregular and less rounded. There is usually considerable pigment, but no medulla. During the first few years of childhood, the hair becomes much coarser, the average diameter often approaching that of the adult. Most of these coarse hairs of young children are without medullas, although an occasional hair with an interrupted or even continuous medulla may be found from an early age. After puberty, the number of hairs with medullas increases, but as a general thing there are many hairs, even in old age, which still lack a medulla. Consequently, if one were to stick closely to the definition of a terminal hair as one containing a medulla, it would be necessary to regard a considerable part of the hair of the head as transitional. Practically, however, there seems to be no essential difference betwen hairs with and hairs without medullas. Morphologically, they all seem to be modified bristles comparable to the mane hairs of some animals. Between them and the down which persists and forms from 6 to 25 per cent. of all the hairs of the scalp, there are all intergradations. The average diameter of the larger hairs has been said to be slightly greater in women than in men.

In middle life, or much earlier in certain persons, some of the follicles cease to produce pigment. The white hairs growing from these follicles are commonly coarser and rarely lack well developed medullas. The frequent coarseness of white hair as compared with pigmented hair of the same person may be noticed in elderly people, in young people with an hereditary tendency to early grayness, and even in pathologic grayness of children. The cause of this relation between the diameter of hair and the presence or absence of pigment is obscure. Apparently, the change in the physiology of the hair follicle takes place at the time a new hair is being formed, since usually, if not always, a hair is entirely pigmented or entirely gray. Among different races and even among different family lines in the same race, there are wide variations in the frequency and extent of grayness.

Finally, at a more advanced age the hair, even though it remains white, again tends to become fine, sometimes assuming a silky character like that of an infant. A similar change is occasionally noticed in younger persons who are becoming bald. In these cases, the delicate fuzz which is last to disappear is probably, although not certainly, largely a growth from follicles which had earlier produced coarser hair, rather than exclusively a persistence of the fine hair which is generally overlooked when the scalp is more luxuriantly covered. The various indications that the same follicle may during a lifetime produce hairs of rather different character, and that its functional activity may vary considerably, do not favor the idea of strictly delimited subtypes of hair on the head. However, there is a universal tendency for group formations of two, three, or even more hairs and considerable normal range in the diameter of the hairs within a small region. It remains to be determined whether follicular atrophy or graying follow a regular sequence in reference to the hairs of a group. Whether or not the return to a more infantile type of hair is accompanied by a change in arrangement from that of the anthropoids to that of the American monkeys, reversing the process which Friedenthal says takes place between childhood and maturity, is unknown. If determined, this might settle the question of whether this late fine hair is simply the persistence of hair that was originally present or the partial replacement of coarse hair that has been lost.

The boundaries of the area which produces the capillus or typical hair of the head are subject to well-known variations. Early in life there is a rather broad transitional zone in which all the hairs are intermediate between capillus and vellus, but later, particularly on the forehead, this zone becomes progressively narrower and the transition proportionately more abrupt. In the back of the neck and in front of the ear, no sharp line of division is established.

The number of hairs in the scalp area varies considerably, and is said to be correlated with the size of the individual hairs and the amount of their pigmentation, finer and less pigmented hairs being more abundant than coarse and darker ones. Friedenthal gives the following estimates for Europeans: light, 140,000; dark, 102,000; red, 88,000. The average length varies greatly with the race but is probably potentially about the same in both sexes of any given race. In white women, it seems to be not far from 60 to 70 cm. The rate of growth averages around 0.4 mm. a day, so it presumably takes from four to five years for one of these hairs to reach its full length. If its entire life span is about four years, as stated by Friedenthal, or according to Stöhr, 1,600 days, it must remain in a resting condition for a very short period. If their estimates are correct, growth of hair is practically continuous in women as well as in men.

From an anthropologic point of view, the form and color of the hair of the head have attracted a great deal of attention,[1] but despite an extensive literature, knowledge on these points is still in an unsatisfactory state. The type of hair, whether straight, curly or kinky, was early recognized by anthropologists in England, France and Germany as an important racial characteristic. Later the form of the hair as seen in cross section was emphasized as of great anthropologic significance. The credit of calling attention to this supposed criterion of race is almost invariably given to Pruner-Bey, whose publication in the memoirs of the Anthropological Society of Paris for 1865 is widely quoted. Pruner-Bey emphasized three types of cross-section forms, the elliptical, the oval and the circular, which he regarded as characteristic respectively of the black, the white and the yellow races. In his classification of mankind, groups of the first order are based on the form of the hair as seen in cross section, groups of the second order on the shape of the head, and those of the third order on the color of the hair.

It is interesting in view of the universality with which the first emphasis on the racial significance of cross-section form of the hair is attributed to Pruner-Bey, to find that the same idea, based on an extensive study of the hair of many people, was clearly stated twelve years earlier by Peter Browne of Philadelphia. In his book, entitled "Trichologia Mammalium or a Treatise on Pile," published in 1853, Browne divided mankind into three "species": "the cylindrical piled," represented in his Plate A by an Indian; "the oval piled," represented by a white man, and "the eccentrically-ellipitical piled," represented by a

1. For the proposed classifications of the human race on the basis of hair form and color suggested by Huxley, Haeckel and others the reader is referred to treatises on anthropology.

negro. In addition to these three main types of hair, which he described and figured in section, Browne recognized several minor subdivisions and variations. It is remarkable that this work which contains a large amount of valuable information on the physical properties and racial characteristics of hair should have been almost universally ignored.

The claims of Browne and Pruner-Bey, however, have not remained unshaken, since it turns out that the cross-section form varies greatly within the same race and even to some extent in the same person. The hair of the Chinese, for example, is often, if not prevailingly, ellipitical, and may be as flat as that of many white people. The cause of the shape of the hair has been the subject of much discussion. According to Fritsch, it is determined by the shape and inclination of the papilla, and

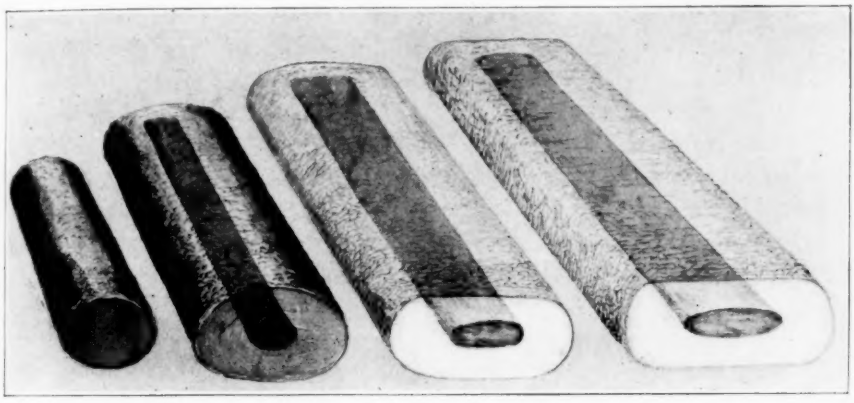

Fig. 40.—Four hairs from the temple of a man 38 years old (about ×200). These hairs grew near together. The two on the left were pigmented, the other two gray. The indexes from left to right were 88, 67, 53 and 42.

this on the whole seems to be the most plausible suggestion, but it cannot be accepted without reservations.

The relative degree of flattening of a hair may be expressed in the form of a hair index, obtained by dividing the least diameter of the hair by the greatest diameter and multiplying the result by 100. The measurements should be taken just far enough from the scalp to ensure maximum values. It will be apparent that the more compressed the hair the lower will be the index. In white Americans, the index generally has a value somewhere between 60 and 90. In twenty-five persons, from the vertex of each of whose heads five hairs were measured, the average index was found to be 73, with a range of from 50 to 89. The actual diameters generally fall between 0.05 mm. and 0.1 mm. Hairs that grow side by side on the same head may vary in their index by 30 points or more (Fig. 40). In the series just mentioned, the average

variation in index for hairs from each of these twenty-five persons was nineteen. It would be premature to make any statement on the heredity of hair form as determined by careful microscopic measurements, but it appears from such data as are at hand that both in index and in actual diameters the hair of the child may occasionally either exceed or fall below that of either parent. In studies along this line, care should be taken to get all specimens from the same part of the scalp, since there are appreciable regional variations.

It will be apparent from the foregoing discussion that the hair shaft is generally a more or less ribbon-shaped structure, much more flattened than is usually imagined even by those who are accustomed to see hairs under a lens, for it requires a specially devised hair rotator of some sort to reveal the true form of the shaft. The shape of the cross section varies widely, approaching a rectangular form on the one hand and a smooth ellipse on the other. This tendency to flattening is remotely suggestive of scales and feathers, but the similarity is probably only a coincidence. A relation between the flattening of the hair and its tendency to curl has often been suggested. Browne, in his discussion of hair types attempts to prove by physical analogy that:

1. Hair that is cylindrical must necessarily hang straightly and lankly from the head.

2. Hair that is oval must inevitably flow or curl.

3. Wool that is eccentrically elliptical must always be crisped or frizzled, and sometimes spirally curled.

The first two types of hair, he maintained, leave the skin at an acute angle, the last at a right angle. The latter part of this contention has not been sustained.

Another much discussed explanation for curling is that suggested independently by Gotte in 1867 and Stewart in 1873, who discovered that the follicle of the negro hair is strongly curved or saber-shaped whereas that of peoples with other types of hair is straight. It has been amply shown by subsequent workers that the curly hair of the negro arises from falciform follicles, but opinion has been divided as to whether or not the shape of the follicle could account for the form of the hair. The association of the two conditions seems suggestive; in spite of the fact that the hair is fairly well cornified down nearly to the bulb and the physis of the curved follicle, to leave its impress on the shape of the free part of the hair is a little difficult. Perhaps the characteristic bend of the follicle immediately above the papilla is the point where the tendency to curl is really imparted.

Coupled with the long spiral curl of the individual hair is the tendency of groups of such hairs to unite in the formation of ringlets or more tightly wound masses. In the "peppercorn" formation, there are

bare areas of skin showing between each tangle of hair, and much work has been done in attempting to determine whether each tuft of curled hair represents a natural or a chance grouping. Topinard is among those who have expressed the opinion that when the hair is combed out new groups form without reference to the previous arrangements, while Krause and many others have maintained that each group of hairs which naturally curl together do so for some special reason. Frédéric attempts to reconcile the two views on the basis of his finding that while the hairs are uniformly distributed over the head in all races, the direction of follicles is more or less parallel in straight or wavy haired races, but irregular and convergent toward many little centers in the curly haired.

From the point of view of heredity, Davenport regards the type of hair form with reference to the curl as due chiefly to the interaction of a pair of allelomorphic genes in various combinations. Curly hair represents the dominant form, straight the recessive. The dominance, however, is not complete, so that heterozygous persons have wavy hair. According to this hypothesis, straight haired parents should have only straight haired children, curly haired parents predominantly curly haired children. Two wavy haired parents might have curly, wavy or straight haired offspring. On the basis of a histologic study of the scalps of several persons of mixed parentage, Fritsch concludes that while the curly form of hair behaves in general as a dominant trait, there is no clear-cut manifestation of mendelian segregation in later generations.

The character of the hair and follicles has been used as a criterion for determining racial purity. In all study of race and heredity, it is necessary to bear in mind the fact that at least in the white race the hair becomes less curly as the person passes from childhood to maturity. The hair has considerable elasticity and some hygroscopic powers which cause it to respond temporarily to differences in moisture. Advantage is sometimes taken of its physical properties to effect more or less lasting changes in its superficial appearance.

Another factor affecting the appearance of the capillus is the twisting of the individual hairs on their own axis. The flattened shaft tends to twist in such a manner that when the hair is drawn slowly through the field of a lens now one side and now the other appears uppermost. This twisting varies greatly in different hairs, being almost absent in some cases and pronounced in others. It may occur in hairs that have the superficial appearance of being lank and straight. It is possibly an exaggeration of this condition that Pinkus refers to as "bayonet hair." Generally the twisting consists of a series of half turns so that one side of the hair is alternately toward the observer and away from him. The length of hair that is involved in the twist ranges from less than a millimeter to several millimeters, or so great a distance that it is difficult

to detect any twist at all. In general, the twisting is not continuous but interrupted. When the twists or half turns involve only a short distance on the hair shaft, and especially when two or more twists occur close together, the hair tends to change its direction in a way that gives it a peculiar frizzly character. Since this apparently irreversible twisting of the hair on its own axis may be seen even within the follicle, there is some probability that it is determined there, perhaps by irregular or periodic changes in the function of the papilla, or by irregular compression of the sheath immediately above. Strangely, this characteristic has been as much neglected in hair work as some of the other traits have been emphasized. It deserves more careful study and may be found to have a greater anthropologic significance than the cross-sectional form.

Finally, the color of the hair is an obvious and much studied trait. In the white race, the range is great. Except in some black haired strains, children are prevailingly lighter than adults. Thoroughly dependable studies on color should be controlled by the use of standard samples for comparison, and wherever possible should include microscopic study of form and grouping of pigment granules. The color is due to the amount and combination of granular melanins and soluble red pigment. In most cases the former is superimposed on the latter, which behaves in heredity as a hypostatic. There are various grades of intensity in the soluble as well as in the insoluble pigments, and the two seem to be controlled by the same factors, since the intensity of the red hair is correlated with the amount of melanin pigment in the parents. Persons with glossy hair are usually heterozygous for the brown pigments, and consequently when two such marry they are likely to have some red haired children. In some cases the dark pigment is acquired, unusually late, so that a red haired child may have more or less black hair at maturity. Leaving red out of consideration, and making due allowance for age changes, darker hair is generally found to be dominant to lighter, so that the child is rarely if ever darker than his darkest parent. Whether or not there may be more than one form of light hair, from the genetic point of view, has not been determined, but if so, there should be rare cases in which light parents produce dark children. Albinism, as is well known, affects the hair, which in some cases is quite white. There is a form of dominant spotting which produces most commonly a white forelock. Sometimes red spots appear on a black field. There are also not infrequent variations of several shades between hairs from different parts of the same scalp. According to a report on army anthropology from the Surgeon-General's office, 100,000 soldiers demobilized in 1919 showed the following proportions of the different hair colors for every 1,000 men: flaxen, 46.67; light brown, 222.77; medium brown, 212.57; dark brown, 460.69; clear red, 12.66;

red and black (i. e., glossy black), 44.64. Total, 1000.00. The incidence of the various colors differs considerably in different states and sections of the country, depending on the racial stocks which prevail there.

As is well known, hair has some capacity to take up stains artificially, as is exemplified by the green hair of copper workers. Friedenthal describes a family characterized by hereditary chrysochloris or "rainbow colored" hair due to some physical property resulting in iridescence.

The various characteristics of hair are undoubtedly determined in large measure by its chemical composition. Rutherford and Hawk conclude, on the basis of what in some respects is inadequate material, that the chemical composition of the hair of the head is influenced by six factors: the race, sex, and age of the person, the color of the hair, the purity of breed, and whether the sample is from a living or a dead subject. Their figures for the percentage distribution of chemical elements in the hair of several groups are given in Table 2.

TABLE 2.—*Percentage Distribution of Chemical Elements in the Hair*

Subjects	Sulphur	Nitrogen	Carbon	Hydrogen	Oxygen
Indians	4.82	15.40	44.06	6.53	29.19
Japanese	4.96	14.64	42.99	5.91	31.50
Negros	4.84	14.90	43.85	6.37	30.04
White adults	5.22	15.79	44.49	6.44	28.66
White children	4.93	14.58	43.23	6.46	30.80

EYEBROWS (SUPERCILIA)

The development of the eyebrows has already been described. At the time of birth, they consist largely of down or hairs only slightly coarser than down. Little by little the down is replaced by terminal hairs of a special type. These hairs have a well-known crescent shape with attenuate or acuminate ends. Many of them are wide in proportion to their length. They are not arranged in group form. The scales are relatively large and moderately flattened except toward the ends. The medulla is conspicuous through the middle part of the hair. The shaft is flattened with a cross section that is more or less angular. According to Friendenthal, the total number of hairs in each eyebrow ranges around 600, and the life span of an individual hair averages about 112 days.

A curious metamorphosis takes place in many of these hairs in the majority of men and in a few women. This change is unusual before the thirtieth year, but may occur in children. It consists in the replacement of some of the typical eyebrow hairs by long irregularly curved or twisted forms with the general characteristics of beard hair. They may reach a length of 6 or 8 cm., and generally have to be kept trimmed. When single or few, they are commonly called "wild hairs"; when more numerous, they produce the effect characterized as "bushy eyebrows."

There is no reason to think that they are a partial reversion to a sinus hair form. Instead they may be regarded as a characteristic manifestation of the general tendency for coarser hairs to appear in various places at and after middle age.

There is considerable variation in the length, width and configuration of the eyebrows. They are sometimes continuous across the middle line. This condition, frequently regarded as hypertrichosis, is possibly due to an embryologically more anterior origin of the eyes or to some other factor causing a lesser interpupillary distance and concomitant slight expansion of tissues near the midline. The direction of hairs in the eyebrows is interesting. According to Frédéric, the prevailing primary arrangement in the fetus shows a division into a short medial and a long lateral portion. This division in the fetus undoubtedly represents the natural part in the eyebrow that is frequently to be seen in adults. Medial to the parting the direction in both fetus and adult is upward and outward. Laterally, there is a narrow zone above in which the hairs point downward and inward and a wider zone below in which they point upward and outward. Since these relations are established in the early fetus, they cannot be attributed to the direct effect of repeated muscular pull.

EYELASHES (CILIA)

In general structure and appearance, the eyelashes are practically identical with hairs of the eyebrows, except that they are typically longer and slightly more curved. They are exclusively of the terminal hair form, all down having disappeared from among them before birth. They do not undergo the later hypertrophy common in hairs of the eyebrows. It is claimed that they are slightly longer in women than in men. LeDouble and Houssay describe an hereditary variation in which the lashes of the upper lid are arranged in three equal rows. Friedenthal says their duration of life is 112 days, with a possible variation of 30 per cent.

THE BEARD (BARBA)

Because of such of its peculiarities as are associated with race and sex, the beard is of particular interest to students of hair. It varies greatly in extent and thickness. In some races, it is virtually lacking. The down of the chin, cheeks, upper lip and fore part of the neck corresponds to that on other parts of the body and shows no sexual or, so far as known, racial, differences during the first few years of childhood. In boys of heavily bearded strains, some of the down at the lateral corners of the upper lip begins to be replaced by terminal hair at about the time of puberty. These restricted areas of terminal or transitional hairs spread gradually toward the middle line till a soft downy

mustache has formed. This requires a considerable period, during which time growth of the hair is relatively slow. By the time the mustache has become apparent, scattered, short, and often curly terminal hairs have developed on the fleshy part of the chin. It is at about this stage that the boy usually begins to shave. Further development of the beard consists in the enlargement of terminal hairs already present and in the appearance of new ones. The latter process results in an increased thickening of the beard on the chin and an extension of the beard covered area. This extension proceeds from centers on the chin and in front of the ears. The downgrowth of hair in the latter area produces the effect of a gradual invasion of the parotid region by the capillus. Careful examination, however, shows that, at least later in life, a transition in characters between the hair of the scalp and that of the face takes place at about the junction of the temporal and parotid regions. The parotid and mental hair areas ultimately become confluent, covering the cheek and extending downward through practically the whole anterior triangle of the neck, and to some extent over the skin above the sternocleidomastoid muscle. The upper boundary of the beard area in its full development is represented roughly by a line drawn from the corner of the nostril across the zygoma to the highest point of attachment of the ear. In front of the ear, there is a zone about 1 cm. wide in which terminal hair is lacking.

The development of the beard is slow and does not reach its ultimate extent till many years after puberty. In fact, it has been shown (Trotter) that the average diameter of beard hair increases throughout life. Another point of considerable interest is that only a part of the down hairs are even replaced by terminal hairs, so that in the beards of men at all ages fine down like that on women's faces is always present. Further, it is only in relatively exceptional cases that the beard reaches the full development just described. A "bald spot," or an area lacking terminal hairs, is common on the lower lip to either side of the midline. The middle region of the cheek also frequently has relatively little or even no terminal hairs. In most negroes, in Indians, in Chinese, and with few exceptions in the darker races generally, the beard is scanty or even lacking in some. It is in the white race that the heavy beard characteristically appears, but even among white men there is wide variation, and frequently it is deficient. In general, the more completely the face is covered, the more numerous are the terminal hairs in the areas where they first appear.

It is interesting to observe that the distribution of the beard in races in which it is little developed corresponds to stages in the development of the beard in young persons of more hairy races. Thus the mustache is the part that is most universally present. Few persons and no

race except, according to Branca, some Australians, who have much other facial hair, lack a good mustache. Some Indians have a few hairs on the upper lip and practically no other indication of beard. Others have a better mustache and a slight beard on the chin with the rest of the face smooth, and so on. Thus, two closely parallel series could be arranged by taking, on the one hand, progressively older boys and young men of a hairy race, and on the other, a series of progressively more heavily bearded old men of less hairy races. This regularity, developmentally and comparatively, in the sequence of appearance of terminal hair on the face is undoubtedly significant, and probably means that the different regions have a certain degree of autonomy and a characteristic reaction to whatever it is that causes hair to grow. It likewise suggests that different follicles of the same region have different

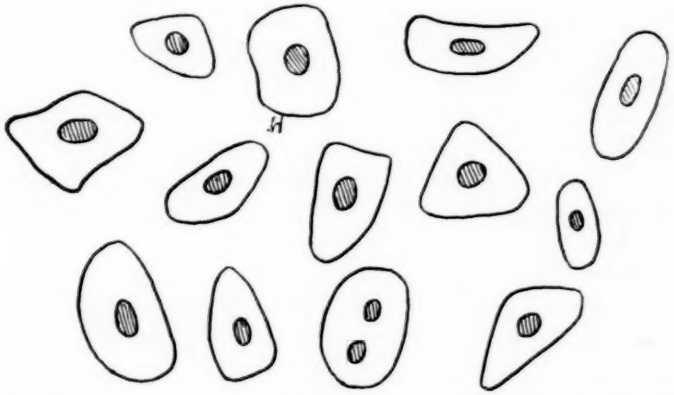

Fig. 41.—Cross sections of beard hairs from an adult man (×82). The four in the upper right part of the group are from the cheek, the five to their left from the upper lip, and the four at the bottom from the chin. One of those shown in the bottom row had two distinct medullas.

susceptibilities, since in general the more restricted the region in which terminal hairs appear the fewer are the terminal hairs to the unit areas.

Phylogenetically, the beard is probably related to that of some of the apes in which its appearance, especially in the orang-utan, is more or less suggestive of the beard in man. In the orang-utan too the mustache when present is more definitely developed toward the corners of the mouth. The question of homology, however, is complicated by the large proportion of sinus hairs in ape beards and their complete absence in human beards.

The individual hairs form a complete series from down to long coarse bristles. Typical beard hairs are variable in shape, with large medullas and flattened, somewhat irregular, scales. The form in some cases closely simulates that of hair from the scalp. Others, especially

the larger ones, are more or less prismatic with triangular or polyhedral cross sections (Fig. 41). The angles are generally rounded; the sides may be either convex, nearly plane, or concave. A common form has three rounded angles with one short convex side and two longer nearly straight sides. This is the effect that would be produced by thickening one side of any ellipse. The normal length up to middle life is probably about from 20 to 30 cm. in the average white man, with a tendency to become decidedly longer in Semitic races. In colored races, it is generally shorter. Like the hair of the head, it may be straight, wavy or curly, and the characteristics of the follicles for these several types should be more thoroughly investigated. The life of a beard hair has been estimated by Friedenthal as from ten to twenty years, which is probably much too long.

The color of the beard is probably never darker than that of the capillus, except where the latter has preceded it in turning white. Darwin called attention to this fact long ago, and emphasized the frequency with which the beard is red in both men and apes. The combination of black hair and red beard is common. On the whole, the hairs of the beard are much less uniformly pigmented than are those of the head, black and blond hairs often being intermingled.

In women, the beard generally remains in the down form. About 30 per cent., however, have a mustache nearly or quite as well developed as that of the average boy at the time he begins to shave, and the number of women who shave or use other means of depilation is much greater than is popularly supposed. It is often stated that the mustache is better developed in dark haired women than in those with light hair, but the critical measurements made by Trotter have failed to substantiate this claim. It may be that there are racial differences, and it has recently been possible to demonstrate a strong tendency to familial idiosyncrasies in this respect. Women with beards on other parts of the face are much less common, and those with a full beard are unusual. This matter will be discussed in the section on hypertrichosis.

In both sexes, Trotter found the number of facial hairs visible with a hand lens to be essentially the same. She likewise found no constant differences between white and negro subjects. But there are characteristic differences for different regions of the face and rather wide individual fluctuations. Disregarding the minute down, and counting only such hairs as are revealed by a low magnification, the most frequent numbers to the square centimeter according to Trotter's figures are as follows: cheek, 74; lower lip, 99; side of chin, 86; center of chin, 91; upper lip, 107. It seems probable that if the down hairs could all be counted, the number for each area would still be found relatively constant; in other words, that individual and racial differences in the

beard are due not to the actual number of hairs to the unit area but to the number of those hairs that show a greater or less degree of hypertrophy. The duration of an individual down or transitional hair on a woman's face is unknown.

HAIR OF THE EAR (TRAGUS)

At birth the ear is often covered with conspicuous lanugo-like hairs. On the pinna, they converge toward a point at about the site of Darwin's tubercle, giving the infant when viewed from the side a particularly fawnlike appearance. These hairs are soon replaced by secondary hairs, which in most women and many men retain their typical down character throughout life. With some men, during the third and more especially subsequent decades, coarse terminal hairs appear on the tragus and to some extent on the margin of the pinna. The terminal hairs on the tragus, which may vary in number from one to a large tuft, partake of the general character of wild eyebrows which usually appear at about the same time. On the pinna itself, they not infrequently take the form of elongated down when hairs of great delicacy may be as much as 2 cm. in length. Ultimately, these also become typical terminal hairs. Both on the tragus and on the pinna the amount of terminal hair, if present at all, seems to increase steadily with advancing years. Whether or not its production is an hereditary trait, does not seem to have been determined.

HAIR OF THE NOSE (VIBRISSAE)

The hairs that grow in the nostrils have a prior claim to the designation vibrissae, but the term is also commonly applied to the wholly dissimilar and unrelated tactile hairs of lower mammals. The vibrissae of man bear a strong resemblance to eyelashes in general proportion, curvature, scales and medulla. Like them, they are decidedly flattened in one plane and as a rule show little tendency to rotate on their axis. They differ from eyelashes in the possibly somewhat less regular medulla, the frequently greater size, and particularly and characteristically in their much blunter ends. Where the former terminates in a decidedly acuminate tip, the latter narrows abruptly (for a hair) to an acute point. Vibrissae occur, but, as well developed hairs, are relatively much less common in women.

As an occasional family trait, the down near the tip of the nose becomes more or less enlarged and may form conspicuous terminal hairs.

AXILLARY HAIR (HIRCUS)

The axillary hair first becomes apparent at about the time of puberty, but the follicles from which it will grow can be recognized macroscopically long before that time. In the adult, the individual hairs are

flattened, often having an index of fifty or less. The cuticular scales are rather irregular and perhaps more divergent than in most other terminal forms, since they offer considerable resistance when a hair is drawn through the fingers from tip to bulb. They are of about the same absolute size as those of the hairs of the head, but relatively they are considerably smaller. There is a well developed continuous medulla. The hair shaft, which is generally from 4 to 8 cm. long and very tapering, is twisted irregularly on its own axis. As in the hair of the head, the turns may be through any number of degrees, from a slight deflection to a complete revolution, and they may be short or long drawn out. Each turn, or partial turn, is usually accompanied by a deviation in the direction of the hair, those which are completed within 2 or 3 mm. producing angular bends in the shaft, while the more gradual turns result in wider curves. The rather large diameter of the shaft and the irregular combination of short and long turns with the resultant angular and curved deflections give the hair its characteristic kinky appearance. A regenerating axillary hair attains its full length in about three and a half months, but how long it persists in a resting stage is not known.

There is little or no sexual difference in the axillary hair. It has been reported by some authors to be more abundant in men, by others as better developed in women. Like the beard, it is not often darker than the hair of the head. Frequently it is dull red. No satisfactory suggestion as to its function has been advanced.

PUBIC HAIR (PUBES)

Pubic hair differs little from that of the axilla. It is slightly larger in all dimensions and perhaps relatively more flattened, since the index not infrequently falls below 50. In other respects, the two are alike. As transitional forms they may be recognized long before puberty. Sexual differences in the individual hairs are slight. They are probably rather longer in men and relatively coarser in women. The color corresponds to that of axillary hair. Of 1,000 women and girls examined in Berlin, Bartels reports that 333 had dark head hair and 667 light, and that of this same thousand, 329 had dark and 671 light pubic hair, indicating a rather close general correlation between the color of head and pubic hair.

The area covered by pubic hair is not quite the same in the two sexes, since in the female the labia minora and medial side of the labia majora are without hair, while the homologous regions in the male are in part covered by hair. Otherwise constant differences are slight. In the majority of women and many men, the upper border of the pubic hair forms a nearly horizontal line at about the boundary between

the pubic and hypogastric regions. In a few women and most men, terminal hair is also present in the hypogastric region, rising in a triangular formation to or toward the umbilicus. This hair, however, is not typical pubic hair, being softer and sometimes of a different color. This suggests that the hypogastric hair belongs with the terminal hair of the trunk and does not in the true sense represent an upward extension of pubic hair, the upper limit of which may consequently be regarded as the same in both sexes.

The function of the pubic hair is not very evident. Many hypothesis have been put forward to account for its presence, not the least bizzare of which is the serious suggestion that in the prehuman era when the species was becoming hairless but when the mother could ill afford to spare an arm for holding her young, natural selection resulted in the retention of tufts of hair in the axillae and on the pubis to which the nursing apelike infant could cling with outstretched arms and inturned feet. On this hypothesis the appearance of hair in these regions in men might indicate an early participation of the male in care of the young, or it might represent a transfer of a trait to the opposite sex. The one suggestion that has not been urged is that the axillary and pubic hair has no important function.

HAIR OF THE TRUNK

In addition to pubic and axillary hair, over 90 per cent. of white men and about 35 per cent. of women have more or less terminal hair on their bodies. Terminal hair of the trunk is intermediate in character between that of the axilla and of the head, finer than the former, stiffer and more flattened than the latter. There is considerable variation in length, but body hair is usually shorter than the axillary hair of the same person, all gradations between down and well developed terminal body hairs occurring (Fig. 38). Pigmentation is generally similar to, or lighter than that of the hair on the head, but is occasionally darker. The rate of growth on the chest is about the same as on the head.

The regions in which terminal hair most frequently appears on the body are the hypogastric, the region of the nipples, center of the chest, and lumbar region. A band of terminal hair on either side of the umbilicus over the rectus muscle, epaulets in the deltoid region and infrascapular patches are common. Observation of many thousand soldiers gave the impression that the different regions mentioned have a certain degree of autonomy in respect to their hair growth, but that there is in general a more or less regular sequence in the regions that are covered. Thus, if there is only a little terminal hair on a man's body, it is almost invariably found in the hypogastric region, giving the appearance of an angular rather than a straight superior border to the

pubic hair. In most men, this about reaches the umbilicus. When there is more terminal hair, it is found in the hypogastric region and also around the nipples and in the center of the chest. Next, the hairy covering of the latter regions becomes confluent, and another patch occurs above the umbilicus or on the shoulders. By further extension and confluence of these hair patches, the whole anterior surface and often the posterior surface of the trunk becomes covered with a thick growth of terminal hair. The latter condition was met in about 0.4 per cent. in a series of some 10,000 soldiers. An independent growth of hair in the lumbar region is in general quite normal but may at times have a pathologic significance. It will be discussed in the chapter on hypertrichosis.

With women, the amount of terminal hair is generally slight, often consisting of only a few scattered hairs, which, however, are of the same character as those in men. They are most frequently found around the nipples and next in the center of the chest. There is some evidence that they are slightly more abundant in dark than in light subjects of both sexes. They are uncommon in the negro but when present conform to the same general pattern. The marked sexual dimorphism in this respect raises the question as to what are comparable conditions in the two sexes. In a recent discussion of the subject, Danforth and Trotter conclude that over half of the white subjects are included in a group in which the women have no terminal hair in the regions under consideration, and the men have as a maximum well developed hypogastric hair and a moderate amount on the chest and about the nipples. If subjects are classified simply according to the presence or absence of terminal hair, the corresponding group for men and women are of different size.

HAIR ON THE EXTREMITIES

It is unusual to find a person who does not have some terminal hair on the legs. In childhood transitional hairs are conspicuous. These are later replaced in part by terminal hairs, which resemble those on the body but are generally shorter. In some women, they are limited to a few on the inner side of the leg, but frequently their number is considerably increased. In many men, the entire leg is covered with possibly fifteen or twenty to the square centimeter. In some instances they are noticeable only near the ankles, at other times they are abundant above and terminate abruptly along a transverse line just below the calf and an oblique line from without inward across the front of the leg. Kidd noticed the latter arrangement and attributed it to "use inheritance" due to the tight fitting shoes of ancestral generations. There is much variation in the pattern of the areas of terminal hair

on both the leg and the thigh. In the latter region, it is characteristically present in men, prevailingly absent in women.

On the forearm, terminal hair first appears just above the wrist and extends downward over the hand and upward to the elbow. From the latter, it continues on the exterior side of the upper arm nearly to the shoulder. The front of the upper arm, the hollow of the elbow and an ill-defined area on the upper half of the flexor surface of the forearm are practically free. The bare area on the front of the wrist and the common absence of hair from the middle segments of the digits have already been mentioned.

SUMMARY

The study of human hair reveals a wide range of forms appearing not only in different racial stocks but even in the same person at different times and in different parts of the body. One of the outstanding peculiarities of the pilary system is the ability of certain hair follicles to produce a series of similar down hairs during a period of years, and then, with a few transitional forms, to convert its subsequent production into the very different type of terminal hair. The capacity, and not infrequently the tendency, to form terminal hair seems to inhere in many and perhaps all down hair follicles. The question of what influences may awaken this tendency is one of the fundamental problems in the study of hypertrichosis.

In the white race, at least, there are few if any sexual differences of importance in the hair before the middle or latter part of the second decade of life. Up to this time, the hair of the head, eyebrows, eyelids, axillae and pubes is essentially the same. From this time on men acquire a greater abundance and wide distribution of terminal hair, while many women, as Friedenthal has remarked, retain almost unchanged throughout life the amount, character and distribution of hair that is peculiar to the boy of 15 or 16. But while the factors that make for increased production of terminal hair are more effective in men, they are not altogether lacking in women. In both sexes, they seem to increase with age.

(To be continued)

Abstracts from Current Literature

RADIUM IN DERMATOLOGY. A. S. CLARK, Am. J. M. Sc. **169**:355 (March) 1925.

After a brief discussion of the physics of radium radiation, Clark describes the technic and dosage for a variety of dermatologic conditions, all of which are particularly suited to this form of treatment. He generally uses a full strength plaque filtered through 0.1 mm. of brass, and he outlines his method of attack for such conditions as clavus, callosities, verrucose lesions, particularly of the plantar surface, leukoplakia, senile keratoses, angiomatous nevi of all varieties, lymphangiomas, malignant melanomas, keloids, granulomas, lupus vulgaris, lupus erythematosus (fixed type) and basal and prickle cell carcinoma of the skin. Other conditions treated include xeroderma pigmentosum, degeneration of old roentgen-ray burns, cheilitis exfoliativa and sarcoid of the Darier-Roussy type.

THE MOTHER'S MILK AS A SOURCE OF INFECTION IN EPIDEMIC PEMPHIGUS NEONATORUM (IMPETIGO CONTAGIOSIA BULLOSA). R. R. MELLON, D. CALDWELL and W. W. WINANS, Am. J. M. Sc. **169**:419 (March) 1925.

Four out of six outbreaks of pemphigus neonatorum occurring during a three year period were found to be due to the presence of *Staphylococcus aureus* in the mother's milk; one was due to an infected burn, and the origin of one was undiscovered. In a sporadic case, the mother had had an erythematous eruption resembling a drug rash, the milk was later cultured, using both the first and last pumping, and was found to contain pure cultures of *Staphylococcus aureus* and *albus* with attendant hemolysis. The lesions on the baby cleared up as soon as the mother's milk was taken from the child.

Similar findings were reported in later outbreaks. In one instance, two babies of different mothers taking the same milk developed the lesions simultaneously. The mothers who have the staphylococcus in the milk are regarded as carriers.

THE BLOOD PLATELETS IN THE LEUKEMIAS. G. R. MINOT and T. E. BUCKMAN, Am. J. M. Sc. **169**:477 (April) 1925.

The findings are summarized by stating that the platelets may be normal, increased or diminished in chronic myelogenous leukemia, while they are usually below normal in chronic lymphatic and acute leukemia. Petechiae are common, and hemorhages may occur in chronic myelogenous leukemia when the platelets are much increased.

THE PATHOLOGY OF FATAL MEASLES. JAMES DENTON, Am. J. M. Sc. **169**:531 (April) 1925.

In this report of the history and pathology of eleven fatal cases of measles, three were due to the measles virus, the primary lesions of measles being found in the lower trachea, bronchi and contiguous lung. Koplik spots were found to be inflammatory lesions of submucous glands, the bluish halo being due to a collar-like venous plexus. A gram-negative bacillus was also found in the three cases, and is believed to have an etiologic relationship to measles.

JAMIESON, Detroit.

ESSENTIAL CHARACTERISTICS OF A MALIGNANT CELL. ALEXIS CARREL, J. A. M. A. **84**:157 (Jan. 7) 1925.

By culture of rous sarcoma, it was determined that this tumor was a disease of the macrophages. Then cultures of normal cells (monocytes) were inoculated with the virus of rous sarcoma and developed malignant properties as was proved by inoculation into fowls. It was found that the malignant monocyte differs from the normal monocyte chiefly in that it is short lived.

From these experiments it appears that the virus of rous sarcoma disappears from the body unless it is taken up by macrophages in which it is propagated, the diseased cell slowly degenerating and dying. The dead macrophages attract normal macrophages, which become modified in their turn. Growth promoting substances (trephones) are set free and stimulate fibroblasts and other tissue cells to increased activity and multiplication. Thus the tumor grows without limit in size.

It thus appears that in the development of rous sarcoma of fowls, the macrophages serve a function quite the opposite of their classical rôle of defenders against foreign invasion.

DERMATITIS FROM DICHLORAMIN-M. J. B. MCNAIR and A. M. NEFF, J. A. M. A. **84**:166 (Jan. 17) 1925.

The authors report the development of a dermatitis in a worker in this new synthetic chemical which is related to dichloramin-T. The dermatitis consists of a papulovesicular eruption of the hands resembling that produced by rhus. Reducing substances (sodium thiosulphate) were found to be effective protectants. The authors suggest that dermatitis from surgical solution of chlorinated soda (Dakin's solution) may be controlled with sodium thiosulphate solution or with a 15 per cent. solution of potassium iodid acidified with acetic acid.

SYPHILITIC SPONDYLITIS. R. B. COFIELD and C. F. LITTLE, J. A. M. A. **84**:174 (Jan. 17) 1925.

During the last eight years at the Cincinnati General Hospital, 111 cases of syphilitic disease of the bones and joints have been recorded. Nine of these were syphilitic spondylitis. The authors divide this condition into: (1) an arthralgic type; (2) gummatous type, and (3) Charcot's spine. Illustrative cases of these types are given.

In all diseases of the spine, syphilis should be considered as an etiologic factor. The gummatous type is sometimes difficult to differentiate from tuberculosis. A rapidly developing painless deformity of the spine should always excite suspicion of a Charcot arthropathy.

TREATMENT OF ARSPHENAMIN "ENCEPHALITIS" WITH SODIUM THIOSULPHATE: REPORT OF CASE. R. H. MCBRIDE, J. A. M. A. **84**:729 (March 7) 1925.

The patient, aged 4, was a congenital syphilitic. After the third dose of sulpharsphenamin, he developed characteristic symptoms of hemorrhagic encephalitis. He recovered after the employment of sodium thiosulphate but also received epinephrin and general supportive measurers.

The author believes the recovery in this case was due to sodium thiosulphate, and records it as additional evidence of the value of sodium thiosulphate in arsenical reactions.

PHYSICAL ALLERGY: PRELIMINARY REPORT. W. W. DUKE, J. A. M. A. **84**: 736 (March 7) 1925.

While the cause of the minority of cases of asthma, hay-fever, urticaria, eczema and other allergic manifestations can be traced to some definite substance (pollens, foods, drugs, etc.), the majority of cases apparently are not sensitive to the well-known allergens. Duke has found in these cases of obscure origin a number which he has definitely proved to be caused by physical agents, such as heat, cold, light, trauma, changes in barometric pressure, etc. These patients exhibit manifestations of allergy regularly on exposure to the physical agent, and are relieved by its removal or by a change to opposite conditions. It is probable, however, that the symptoms are due to the production of an allergic substance in the tissues as the result of exposure to unfavorable conditions. From certain data, this substance may be of histamin-like nature.

The reactions produced are of four kinds: (1) contact, (2) reflex-like, (3) shock, and (4) solitary.

The most common causes of the reactions are heat and cold. Duke suggests the designation physical allergy for the type of reaction described in this report.

CHRONIC ROENTGEN-RAY DERMATOSES AS SEEN IN THE PROFESSIONAL MAN H. N. COLE, J. A. M. A. **84**:865 (March 21) 1925.

Cole believes that there are a great many more cases of protessional radiodermatitis than have been reported, and that a word of warning about it at this time is not amiss in view of the widespread use of the roentgen ray for diagnostic and therapeutic purposes.

Cole records nine cases in which the hands and face alone were affected. All but two of the cases followed continued exposure to the roentgen ray without proper protection. The onset of chronic changes were delayed, but once established have been progressive and have led to malignant changes in six of the patients.

Microscopic study shows that the vessels suffer the greatest injury and that changes in the collagenous and epidermal tissues are secondary and due to insufficient blood supply.

The treatment of the condition is successful if instituted early and in cases in which only moderate damage has been done. Quartz lamp therapy, carbon dioxid snow, electrocoagulation, surgery, and in some cases radium and the roentgen ray, have been successfully used. Prophylaxis is the best treatment. Every roentgen-ray and radium user should adopt the measures of protection advised by the Royal College of Physicians and the American Roentgen-Ray Society.

CLINICAL STUDIES ON THE KAHN REACTION FOR SYPHILIS. III. THE TEST WITH SPINAL FLUIDS. H. L. KEIM and R. L. KAHN, J. A. M. A. **84**:881 (March 21) 1925.

The authors examined 1,000 spinal fluids by the Kahn test and compared the findings with the Wassermann reaction run simultaneously. In 222 cases of general paralysis, there were six divergent reactions; in 124 cases of tabes, 18 discrepancies; in 387 cases of diffuse neurosyphilis, 87, and in 264 cases of noninvolvement of the brain or cord, 3 divergences. The majority of the disagreements in the reactions occurred in treated patients. The results

indicate that the Kahn reaction compares favorably in specificity and sensitiveness with the Wassermann test.

THE MECHANISM OF TOXIC ACTION OF ARSPHENAMIN ON THE HEART. W. D. REID, J. A. M. A. **84**:883 (March 21) 1925.

Reid is concerned with cases of increase or development of heart failure, and especially with sudden deaths after injection of arsphenamin. The action of arsphenamin on the heart was studied by means of electrocardiograms. This study showed changes consistent with a prolongation of the conduction period and a shortening of the refractory phase. These effects of arsphenamin added to the bad metabolic condition of a diseased heart may lead to severe arrhythmias. This study suggests caution in the use of arsphenamin in patients with cardiac disease.

A CASE OF RAT-BITE FEVER. P. W. MONROE and H. MOOSER, J. A. M. A. **84**:890 (March 21) 1925.

This is a report of a case with typical symptoms promptly cured by neoarsphenamin. Animal inoculation with serum from the original wound and with venous blood were successful.

TREATMENT OF PARESIS: RESULTS OF INOCULATION WITH THE ORGANISM OF BENIGN TERTIAN MALARIA. W. W. ELDRIDGE, J. E. LIND, S. A. SILK and P. J. TRENTZSCH, J. A. M. A. **84**:1097 (April 11) 1925.

The authors have treated sixty-eight patients and observed them for more than a year. Each patient was allowed to have from sixteen to eighteen paroxysms. Nearly all the patients had received arsphenamin and mercury before or after malarial treatment. The patients under observation were in early, moderately advanced and far advanced stages of the disease.

At the end of the observation period there were fifty-five cases left for consideration. Of this number, eighteen, or 32.7 per cent., are improved. Twenty-one (38.1 per cent.) show further deterioration. Thirteen patients died during the observation period, a number from intercurrent infections. The moderately advanced cases appeared to respond best to the treatment.

The authors tentatively conclude that the malaria treatment of paresis results in a greater number of improved and arrested cases than follow other methods of treatment. The course of the disease is so capricious that no undue optimism is warranted.

MICHAEL, Houston, Texas.

STUDIES IN EXPERIMENTAL SYPHILIS. I. THE INFLUENCE OF THE SIZE OF THE INOCULUM ON THE COURSE OF EXPERIMENTAL SYPHILIS IN THE RABBIT. A. M. CHESNEY and J. E. KEMP, J. Exper. Med. **41**:479 (April) 1925.

In their work with rabbits, the authors found that the size of the inoculation dose affected the incubation period — the larger the dose the shorter the incubation period.

The course of the disease as a whole was not affected, individual cases, however, occasionally running a malignant course.

STUDIES IN EXPERIMENTAL SYPHILIS, II. THE INFLUENCE OF A NON-SPECIFIC INFLAMMATORY REACTION UPON THE DEVELOPMENT OF THE CHANCRE. A. M. CHESNEY and J. E. KEMP, J. Exper. Med. **41**:487 (April) 1925.

Surface wounds, particularly old surface wounds, were found to be especially favorable to the development of *Spirochaeta pallida*, as the chancre

develops relatively soon and reaches a greater size in old than in recent wounds. Coal tar dermatitis acts in a similar manner.

The hypothesis they advance to account for this phenomenon is that active proliferation on the part of fixed connective tissue cells and epithelial cells is directly associated with multiplication of *Spirochaeta pallida*, this hypothesis explaining why the organisms are so numerous in fetuses and also why lesions are more likely to develop at the site of traumatism.

JAMIESON, Detroit.

TREATMENT OF GENERAL PARALYSIS BY MALARIA. J. WISHART DAVIDSON, Brit. M. J., March 7, 1925.

J. Wishart Davidson reports on the treatment of general paralysis by malaria. He used the tertian type and conveyed the infection by the mosquito and by inoculation, the latter intravenously, intramuscularly and subcutaneously. The incubation period varied according to the mode of infection, averaging four days by the intravenous route, seven by the mosquito route, ten by intramuscular and twenty by subcutaneous injection. The patients were allowed to have from seven to ten rigors before quinin therapy was started. Coincident treatment with neo-arsphenamin was employed. Remissions in the general paralysis took place at any time, some during the period of malarial pyrexia and in others as long as six months later. Davidson obtained complete remission in 13 per cent. of his cases; mental and physical improvement in 17 per cent.; slight mental with improved physical health in 32 per cent.; no change in 10 per cent.; deaths, including six who collapsed during treatment, in 28 per cent. Relapses of the malaria were frequent, but these occurred with one exception in the mosquito inoculated infections, which he explains by the statement that the mosquito strain, while reacting to quinin, in many instances soon becomes resistant to the immune body. He concludes that the malaria treatment of general paralysis is justifiable and hopeful, provided the patients are in fair physical health. The earlier the case, the better is the prognosis.

THE WASSERMANN REACTION GIVEN BY LEPERS' SERA. MAJOR W. D. H. STEVENSON, Indian J. Med. Res. **12**:583, 1925.

Fifty-two patients were examined, including fifteen with anesthetic cases and thirty-seven with tuberculous cases (one being a mixed tuberculous anesthetic). Of the fifteen anesthetic cases, two gave a completely positive reaction with all strengths of extract used; two gave a completely negative reaction with all strengths of extract used. The complete results are: (*a*) With the 10 per cent. alcoholic extract as antigen: seven gave a completely positive reaction; two gave a strong partial reaction; four gave a weak partial reaction; two gave a negative reaction. (*b*) With the 5 per cent. alcoholic extract as antigen: four gave a completely positive reaction; three gave a weak partial reaction; eight gave a negative reaction. (*c*) With the 2.5 per cent. alcoholic extract as antigen, two gave a completely positive reaction; two gave a weak partial reaction; eleven gave a negative reaction.

Of the thirty-seven patients with tuberculous and mixed tuberculous anesthetic cases, thirty-three were examined with all the strengths of antigenic extract, the serum being deficient in amount in the remaining four. Seven gave

a completely positive reaction with all strengths of extract used; one gave a completely negative reaction with all strengths of extract used (Case 13—this patient had been thoroughly treated with nastin).

The complete results are: (*a*) Of thirty-seven patients tested with the 10 per cent. alcoholic extract as antigen, twenty-seven gave a completely positive reaction; four gave a strong partial reaction; five gave a weak partial reaction; one gave a negative reaction. (*b*) Of thirty-five patients examined with the 5 per cent. alcoholic extract as antigen, eighteen gave a completely positive reaction; two gave a strong partial reaction; five gave a weak partial reaction; ten gave a negative reaction. (*c*) Of thirty-three patients examined with the 2.5 per cent. alcoholic extract as antigen, seven gave a completely positive reaction; three gave a strong partial reaction; six gave a weak partial reaction; seventeen gave a negative reaction.

Those with tuberculous cases on the whole gave a strong positive reaction more frequently than those with anesthetic cases, and the average strength of the reaction was higher among them.

Regarding the globulin content of the same serums, the authors found that a serum may have a high globulin content and yet give a negative Wassermann reaction. A drop in globulin content may be the first indication of improvement under treatment, the Wassermann reaction remaining high. The general average of globulin content in leprous bloods is very high.

GUY, Pittsburgh.

ADVENT OF MODERN SYPHILOLOGIC DOCTRINES: THE WORK OF JOSEPH ROLLET, CHIEF SURGEON OF THE HOSPITAL OF ANTIQUAILLE, LYONS, FROM 1855 TO 1864; HIS LIFE (1824-1894). GEORGES THIBIERGE, Ann. de dermat. et syph. **5**:609 (Nov.) 1924.

Endowed with unusual abilities as an observer and constructive critic, Rollet established the existence of an incubation period of syphilitic chancre and ascertained its duration. He also proved the existence of cephalic chancroid and of the mixed chancre, overthrowing many of the theories of his contemporary, Ricord. He was largely instrumental in showing that the lesions of so-called secondary syphilis are contagious, and he did much to clarify the medicolegal aspect of syphilis. His findings have been of lasting value as the basis of modern syphilology. A man of broad classical education and a gifted teacher, public recognition of his achievements was delayed because of his modesty. In 1889, he was made honorary president of the newly formed French Society of Dermatology. In a complete article, occupying this entire issue of the *Annales*, Thibierge clearly outlines the life and accomplishments of this great man, whose name deserves to be better known.

A CASE OF ANNULAR CENTRIFUGAL ERYTHEMA (OR CHRONIC MIGRATORY PAPULOCIRCINATE ERYTHEMA) OF DARIER WITH ENDOCRINOUS DISORDERS. L. BORY, Bull. Soc. franç. de dermat. et syph. **31**:399, 1924.

In a girl, aged 13, there was a circinate, erythematous eruption involving the entire surface of the skin except the neck and scalp. The first lesion had appeared on the left hip. Each lesion appeared as an erythematous papule which gradually extended peripherally, with complete central involution. There was slight initial pruritus, which soon subsided entirely. Symptoms of exophthalmic goiter were present

CUTANEOUS PRURITUS WITHOUT A CUTANEOUS ERUPTION OF LICHEN PLANUS BUT WITH BUCCAL LICHEN PLANUS. A. GOUGEROT, Bull. Soc. franç. de dermat. et syph. **31**:404, 1924.

Three such cases in which the pruritus was of several months' duration are briefly reported. Relief gradually ensued with the administration of sodium cacodylate and the local application of a 1 per cent. ointment of chrysophanic acid.

A DERMATOSIS CAUSED BY THE BITES OF PEDICULOIDES VENTRICOSUS IN GRAIN WORKERS. HUDELO and DUMET, Bull. Soc. franç. de dermat. et syph. **31**:405, 1924.

The authors report three cases occurring in one establishment. The causative organisms were found in the grain sacks which had been handled by the workmen.

PITYRIASIS RUBRA PILARIS WITH SIGNS OF HYPOTHYROIDISM. LOUSTE, LEVY-FRANCKEL and THIBAUT, Bull. Soc. franç. de dermat. et syph. **31**:407, 1924.

This case, of six months' duration, in a woman, aged 52, is similar to one presented before the French Society in 1922. Such cases are interesting in view of a possible relationship between the keratodermas and endocrinous disturbances.

CONGENITAL SYPHILIS OF THE CRANIAL BONES. A. LOUSTE and L. LOUET, Bull. Soc. franç. de dermat. et syph. **31**:409, 1924.

In a man, aged 23, there had been recurrent epileptiform attacks of the jacksonian type for two years; there was a cranial hyperostosis in the right temporoparietal region. There were hutchinsonian teeth, and the Wassermann reaction was positive. The mother presented distinct signs of aortitis.

A CASE OF ERYTHROMELIA. LOUSTE, CAILLIAU and DARQUIER, Bull. Soc. franç. de dermat. et syph. **31**:412, 1924.

The authors describe the histologic findings in a case of acrodermatitis chronica atrophicans previously presented.

INGUINAL LYMPHADENOMA. MILIAN and SOLENTE, Bull. Soc. franç. de dermat. et syph. **31**:415, 1924.

In a man, aged 50, there was multiple bilateral lymph node enlargement in the inguinal regions. Histologic study established the diagnosis, and radiotherapy was successful.

GENERALIZED LICHEN PLANUS WITH ACUTE OUTBREAKS AND POLYADENOPATHY (ALEUKEMIC LYMPHADENIA). HUFNAGEL and PIERROT, Bull. Soc. franç. de dermat. et syph. **31**:417, 1924.

The eruption of lichen planus included buccal lesions and was typical, clinically and histologically. There was no evidence of syphilitic infection in the history, physical examination and laboratory findings to account for the generalized lymph node enlargement, and there was no leukemia.

TRIAL OF TREATMENT BY THE BACTERIOPHAGE IN CUTANEOUS INFECTIONS. GOUGEROT and EDOUARD PEYRE, Bull. Soc. franç. de dermat. et syph. **31**:420, 1925.

According to Hérelle, this substance passes through filters impermeable to bacteria; it is said to destroy bacteria. In preparing it for therapeutic use, staphylococci are placed in broth containing a few drops of it; after twenty-four hours' incubation, the material is filtered, and the filtrate is used. Every pustule is opened and some of the filtrate introduced, and a compress wet with the filtrate is applied. This procedure is to be repeated every two days, and in three cases the author has obtained apparently complete cure after eight or ten applications. Sycosis vulgaris, pustular seborrheic dermatitis and furunculosis were treated with success by this means.

TWO ACCIDENTS AFTER INTRAMUSCULAR INJECTIONS OF BISMUTH HYDROXID IN AQUEOUS SUSPENSION. CIVATTE, Bull. Soc. franç. de dermat. et syph. **31**:423, 1924.

In two patients with latent syphilis both of whom had received a number of these injections previously without reactions, anxiety, weakness, cardiac palpitation and intense cyanosis occurred within two minutes after the treatment, the symptoms disappearing in twenty minutes. In spite of precautions, the author feels that some of the substance injected must have entered a vein by reflux, an accident which would have been unlikely had an oily suspension been used.

STERILIZATION IN EARLY SYPHILIS AND EXAMINATION OF THE CEREBROSPINAL FLUID. LEREDDE, Bull. Soc. franç. de dermat. et syph. **31**:428, 1924.

According to Leredde, the term "sterilization" has only a relative value in the treatment of syphilis, but he recommends a generous amount of arsenical treatment as early as possible, with a view to preventing future manifestations of the disease, especially in the central nervous system. In sixteen of twenty cases he found early changes in the fluid after energetic treatment.

BUCCAL ADMINISTRATION OF THE ARSPHENAMINES; CONCERNING THE COMMUNICATION OF CLEMENT SIMON. LEREDDE, Soc. franç. de dermat. et syph. **31**:436, 1924.

The author discourages the use of this method at present, declaring that further investigations are needed.

PARKHURST, Toledo, Ohio.

DERMATOLOGIC ABSTRACTS

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

PATHWAYS OF INFECTION OF CENTRAL NERVOUS SYSTEM IN HERPETIC ENCEPHALITIS OF RABBITS CONTRACTED BY CONTACT; COMPARATIVE COMMENT ON MEDULLARY LESIONS IN CASE OF HUMAN POLIOMYELITIS. E. W. GOODPASTURE, Am. J. Path. **1**:29 (Jan.) 1925.

Of ten experiments in which normal rabbits were placed in contact with rabbits infected in the eye with the virus of herpes simplex, seven contracted a herpetic encephalitis, and three of these died of the disease; four were killed

a short time after the first appearance of symptoms. One rabbit which showed a slight elevation of temperature on the fourth day after exposure was killed two days later and the brain revealed no evidence of herpetic infection. Two rabbits after exposure for several days showed no symptoms of herpetic infection. Six weeks later one of these rabbits was inoculated on the eye with herpetic virus and died nine days later with herpetic encephalitis, thus showing no evidence of immunity to the virus. In the case of five rabbits whose pons and medulla were examined, it was clearly shown that the virus entered the brain twice through the sensory division of the fifth cranial nerves, once through the ninth cranial nerves, and twice through both these nerves. In two cases in addition to other lesions there was a herpetic inflammation involving the accessory motor nuclei at the lateral angles of the floor of the fourth ventricles. Virus apparently entered by way of the motor nerve through the fibers which have their origin in these nuclei. An opportunity was afforded to study histologically the brain of a sporadic case of poliencephalomyelitis in which lesions were present in the medulla that were strikingly analogous to those present in a similar situation in rabbits which have acquired herpetic encephalitis through an invasion of the brain by way of the glossopharyngeal nerve. Sufficient material was not obtained from this case to make a complete study of the central terminations of peripheral nerves. It is suggested that the virus of poliomyelitis in human infections may enter the brain through peripheral nerves.

Treatment of Syphilis of Aorta. H. Schottmüller, Am. J. Syph. **9**:1 (Jan.) 1925.

Schottmüller's experience as to the value of intensive and long continued treatment of syphilitic disease of the aorta not only indicates the importance of beginning antisyphilitic treatment at the earliest possible date but also of pushing it until a definite result is obtained. Moreover, it illustrates the necessity of giving due consideration to even the slightest manifesations of the heart or of the vascular system, and this applies particularly to patients of an advanced age (the oldest patient, thus treated, died at the age of 68). Even though the Wassermann reaction is negative, every possible diagnostic aid, including the roentgen ray, should be employed to enable the making of an early diagnosis, for only an early diagnosis will make it possible to give adequate treatment and thus save a large percentage of cases. Since the advent of specific treatment, Schottmüller says, syphilitic aortitis should always be grouped under curable diseases.

Diagnosis of Primary Syphilis by Culture. F. G. Harrison, Am. J. Syph. **9**:81 (Jan.) 1925.

Cultures in twenty-four cases of primary syphilis as demonstrated by the dark field were taken by Harrison and eleven cases, or approximately 46 per cent., resulted positively.

Juvenile Paresis. C. Rosenheck, Am. J. Syph. **9**:96 (Jan.) 1925.

Rosenheck reports two cases of juvenile general paresis and points out that it probably occurs more frequently than is generally supposed. A considerable number of cases are "formes frustes." Juvenile general paralysis is the product of a prolific and degenerate stock plus a congenitally acquired syphilis. The clinical picture of general paralysis in childhood or youth is

rarely as typical as that of the adult. This is obviously due to the incomplete cerebral development and insufficient mental acquisitions. In man, however, the symptomatology differs very little from the adult form. Two marked features are, however, present in the juvenile form that are worthy of mention. These are the entire absence of grandiose ideas and early and progressive deterioration.

WASSERMANN TEST. VI. INFLUENCE OF RACE AND NATIONALITY. D. L. BELDING and I. L. HUNTER, Am. J. Syph. **9**:119 (Jan.) 1925.

Belding and Hunter state that the incidence of syphilis as indicated by a Wassermann survey varies with different races and nationalities, the greatest difference being found between the negro and white races. The negro as a class is an important source of error in the interpretation of the Wassermann survey and should be considered separately in making statistical comparisons. The percentage of positive Wassermann tests in pregnant women in Boston was 9.4 for the American of at least the second generation, 16.0 for the negro, and 7.7 for the Russian Jew. Collected statistics of Wassermann surveys, chiefly from the South, give 30.67 per cent. positive for the negro. According to birthplace, the foreign and Northern negroes gave 10.0, the Southern 27.1 per cent. The ratio of white to negro varies from 1:1.67 to 1:2.48. The authors' ratio, 1:1.76, is approximately the same. The low incidence of syphilis among the Russian Jews, 7.7 per cent., is explained by the more protected family life, a condition rapidly being changed by Americanization. Americans engaged in trade gave the lowest percentage of positives, 4.6. Negroes employed in domestic and personal service have a lower incidence than those in manufacturing and mechanical occupations, 7.6 versus 18.4 per cent. Negro chauffeurs are particularly high, 55.5 per cent. Jews in manufacturing and mechanical occupations gave a lower percentage than those in trade, 6.4 versus 9.8. The clinical reaction of the three races varies, the Jew giving the least and the negro the greatest response. These statistics indicate that clinical evidence of syphilis is 1.8 times as frequent in the negro as in the white races. In non-syphilitic multiparas, the proportion of previous fetal deaths to total conceptions is greatest in the negroes and least in the Jews. The increase above the negative rate in the positive negroes is 2.2 times the average. The negative negro gives the smallest percentage of children surviving the first few years of life. The positive negro shows a marked decrease, about one-half the ratio for the white races, indicating the disastrous effect of syphilis on the reproductive capacity of the negro.

SKIN INFECTION OF RABBITS WITH HEMOLYTIC STREPTOCOCCI ISOLATED FROM PATIENT WITH ERYSIPELAS. I. METHOD OF DEMONSTRATING PROTECTIVE ACTION OF IMMUNE SERUMS. T. M. RIVERS, J. Exper. Med. **61**:179 (Feb. 1) 1925.

Cultures of a hemolytic streptococcus isolated from a human case of erysipelas were tested by Rivers for ability to produce lesions by injecting various amounts intradermally in shaved rabbits. Severe lesions could be developed at will in this way despite the fact that intravenous or intraperitoneal inoculations of large doses of the cultures failed to kill. The lesions were of two sorts, phlegmonous and erysipelas-like. A serum capable of warding off the injurious action of the streptococcus on the skin was procured from animals receiving repeated intracutaneous inoculations of the organism. Normal serum by contrast had no protective effect. By intradermal injections at several

points in the same normal rabbit of small quantities of mixtures of equal parts of serum and various dilutions of a suspension of streptococci, it proved possible to test serums for the presence of substances protective against the streptococcus.

GRANULOMA INGUINALE. A. R. FRASER, J. Urol. **13**:227 (Feb.) 1925.

Eighteen cases of granuloma inguinale are summarized by Fraser. Tartar emetic was employed in sixteen. Six healed completely. In ten cases, there was no benefit from the intravenous use of this drug. In one case, tartar emetic was not employed, and in another case the condition healed after administration of sulpharsphenamin. In no case was the rapid healing following the intravenous administration of tartar emetic reported by some workers observed.

DERMOID CYSTS OF FLOOR OF MOUTH. R. COLP, Surg. Gynec. & Obst. **60**:183 (Feb.) 1925.

Colp reports two cases of dermoid cyst of the floor of the mouth and one case of lingual cyst.

BREAST DISEASE AND DEMODEX FOLLICULORUM. H. CHAMBERS and A. M. SOMERSET, Lancet **1**:172 (Jan. 24) 1925.

According to Chambers and Somerset breast disease in England is often associated with the presence of an acarus (*Demodex folliculorum*) which lives at the orifice of the nipple. This acarus apparently is prevalent, irrespective of the social class or personal habits of the patient. It lives deeply in the sebaceous glands and is not killed by treatment of the skin with strong antiseptics; it can remain alive for over a week buried in the skin. Any form of preventive measures must, therefore, be long continued and must aim at destroying the acarus when it comes to the surface. It has been suggested by Borrel that this parasite can convey to the breast ducts a living virus which can set up malignant disease. At present there is no evidence to support or to disprove this theory.

PARASMALLPOX (ALASRTIM; AMAAS). R. P. GARROW, Lancet **1**:225 (Jan. 31) 1925.

The clinical description of parasmallpox given by Garrow is based entirely on personal observation of 500 cases. The coining of a new name is not intended to suggest the discovery of a new disease, but merely to indicate its recognition as a definite clinical entity, an acute specific infectious disease, moreover, which is fixed in type and does not tend to assume virulence and acquire the death dealing and disfiguring properties of smallpox. The three most remarkable clinical features of the disease are: first, the primary toxemia which was almost universally regarded by both patient and doctor as an ordinary attack of influenza; secondly, the focal lesion, which, smaller and more superficial in the skin than the eruption of smallpox, is accurately described as "pimples"; thirdly, frequently the eruption appears after, it may be several days after, the patient has completely recovered from the initial illness. Apart from secondary infections of the skin like impetigo, etc., the only complications observed in this series were connected with the eyes. They were: blepharitis and conjunctivitis; ulceration of the cornea and keratitis profunda. The mortality of parasmallpox in otherwise healthy subjects is nil. As to the influence of vaccination in the prevention of parasmallpox,

no person vaccinated in infancy was attacked under the age of 17 years. No person vaccinated in infancy and revaccinated at any age was attacked.

ACIDIC VALUE OF URINE IN SKIN AND OTHER MANIFESTATIONS. F. C. DOBLE, Lancet **1**:272 (Feb. 7) 1925.

Doble is of the opinion that urine with a high acidic value is a very much commoner condition than is generally supposed. Many people have it in a definitely pathologic degree who are apparently in perfectly good health. On the advent of some additional or superimposed strain, some organ or tissue of the body will refuse to function properly. It prevents or hinders the clearing up and healing of lesions and there seems to be no doubt that it can, by itself, poison various tissues of the body. Doble suggests that it is usually congenital but may be acquired. Treatment with alkalis will relieve the patient and allow the lesions to heal up, but the high concentration of the hydrogen ions in the urine will return and the patient will have a relapse when another strain is put on the organs or tissues. Thus it would seem that this high acidic value, apart from treatment, is permanent. Doble has found so far that exceptions to this rule are in cases of gastro-intestinal toxemia. In this type of case there is usually an erythematous or papular rash and the p_H value of the urine varies from 5 to 5.6. When the rash fades away, the p_H value of the urine returns to normal, even without treatment, showing that the phase is only a temporary one.

JUTE DERMATITIS. D. F. CURJEL and H. W. ACTON, Indian J. M. Res. **12**:257 (Oct.) 1924.

Jute dermatitis is described by Curjel and Acton as a nonsuppurative folliculitis caused by the mechanical blocking of the sebaceous gland orifices by plugs of the unexfoliated stratum. The mineral oil used for softening the jute does not irritate the skin, but protects the skin from water and so increases the accumulation of the corneum. The disease has escaped adequate description as a trade dermatitis among workers in the tropics, for the eruptions are not associated with subjective symptoms, and occur in a class of patients who are indifferent to their personal appearances.

COMPLEMENT DEVIATION AND GLOBULIN CONTENT IN BLOOD OF LEPERS. W. D. H. STEVENSON, Indian J. M. Res. **12**:583 (Jan.) 1925.

Two conclusions are drawn by Stevenson: First, that a serum may have a high globulin content and yet give a negative or very weak Wassermann reaction. A drop in the globulin content may be the first indication of improvement under treatment—the Wassermann reaction still remaining high. Second, the general average of the globulin content in leprous bloods is very high. It is higher than the average globulin content of treated cases.

A SPECIAL FORM OF RENAL SYPHILIS. A. MOUKTAR, Ann. de méd. **17**:48 (Jan.) 1925.

After reviewing six of the nine cases with marked albuminuria, polyuria, and decrease in the specific gravity of the urine, Mouktar reports that the patients examined two or four years after treatment were in a satisfactory condition and able to work. The prognosis in such cases naturally depends on the stage of the affection when the antisyphilitic treatment is begun. The

treatment should be careful but sufficient. Mercury seemed the most effective agent against the renal lesions. He found no definite results from treatment with potassium iodid, and considers its value doubtful.

ADAMS-STOKES DISEASE IN A NONSYPHILITIC. G. BICKEL, Arch. d. mal. du cœur. **18**:39 (Jan.) 1925.

Bickel's patient, aged 48, without a history of syphilis, presented complete auriculoventricular block. Tentative antisyphilitic treatment not only had no favorable results, but coincided with a definite aggravation. Death occurred suddenly some weeks afterward. The electrocardiograms clearly showed variations in the heart block parallel to the treatment. Bickel says that the antisyphilitic treatment frequently prescribed for all cases of heart block, even with no history of syphilis and negative Wassermann test, may be dangerous. The Adams-Stokes syndrome may result from a number of different processes, of which syphilis is only one. He considers the syndrome in his case the result of obesity changes.

ACTION OF RADIUM ON BLOOD SYSTEM. WEIL and LACASSAGNE, Bull. de l'Acad. de méd. **93**:237 (March 3) 1925.

Weil and Lacassagne observed these cases in two men about 40 years old, who had handled radioactive substances, of thorium origin. After having worked together two or three years, they both died a few days apart. The prolonged small doses of radiations exerted in one case a destructive action on the blood system; in the other, the irritative effect of the radium rays predominated, inducing leukemia.

PATHOGENESIS OF HIRSUTISM. E. APERT, Bull. et mém. Soc. méd. d. hôp. de Paris **49**:131 (Jan. 30) 1925.

Describing a case in a young woman, Apert relates that the syndrome of hirsutism is mostly produced by proliferation of the suprarenal cortex. He cites two cases, one in a girl, 3 years old, in which hirsutism improved after removal of an ovarian tumor containing suprarenal tissue. The attenuated physiologic hirsutism of pregnancy may also be ascribed to hypertrophy of the corpus luteum. The explanation is the common origin of the ovary and of the suprarenals in the embryo, and the histologic resemblance between the corpus luteum and the suprarenal cortex.

VARICELLA AND ZOSTER. LESNÉ and DE GENNES, Bull. et mém. Soc. méd. d. hôp. de Paris **49**:221 (Feb. 13) 1925.

Lesné and de Gennes present arguments to prove that chickenpox and herpes zoster are different affections. While chickenpox is a frequent disease in children, zoster occurs only rarely in them. The eruption in chickenpox is generalized, in zoster it is localized. Relapses never occur in varicella, but the disease does not confer immunity against zoster. Many adults with zoster had varicella in childhood. One boy had both diseases at an interval of several years. Leukopenia and mononucleosis exist in chickenpox, but are absent in zoster. The cerebrospinal fluid is normal in varicella, while the lymphocyte reaction is constant in zoster, and the latter cannot be transmitted by inoculation. Inoculation with virus from chickenpox is followed eight to twelve days later by a characteristic eruption at least in one out of every two cases. The inoculation is positive even in children with zoster.

NEURITIS FROM ARSPHENAMIN. SÉZARY and CHABANIER, Bull. et mém. Soc. méd. d. hôp. de Paris **49**:279 (Feb. 20) 1925.

Sézary and Chabanier describe six cases, two of an attenuated form, simulating incipient tabes, four of a generalized form, a pseudolocomotor ataxia. Large doses of the drug are an undeniable factor in the neuritis, but the latter may occur with small doses, probably owing to anaphylaxis. The neuritis seems to be more frequent with subcutaneous injections than with intravenous, since the elimination of arsenic is more rapid with the latter. Persistence of the pupil reflex, integrity of the sphincters, tingling in the soles, and slight changes of sensbility in the limbs are the differential signs from tabes.

"VARICELLA AND ZOSTER." SICARD and PARAF, Bull. et mém. Soc. méd. d. hôp. de Paris **49**:301 (Feb. 27) 1925.

Sicard and Paraf injected 5 c.c. of serum of a convalescent from zoster in two children out of three that had been exposed to contagion of chickenpox. All three children developed chickenpox.

HYPERTENSION IN CHILDREN. J. GÉNÉVRIER, Bull. méd. **39**:169 (Feb. 14) 1925

Génévrier says that congenital syphilis may cause the hypertension without renal or cardiovascular abnormalities. It becomes manifest about the eighth or tenth year, with impairment of the general health, anemia and retarded development. He has used mercury, arsenic, and bismuth, alone or together, always without reduction of the tension, but with notable improvement in the general condition. Hygienic and dietetic regulations appear most effective in warding off any aggravation of the syndrome. Iodids are recommended. He hopes by this combination treatment of the child to prevent grave cardiac disturbance in the young adult.

EXFOLIATIVE DERMATITIS AND ERYTHRODERMIA. A. RONCHI, Pediatria **33**:131 (Feb. 1) 1925.

Ronchi concludes that Leiner's erythrodermia is of inflammatory origin, and identical with Ritter's exfoliative dermatitis of infants.

COMPLAINTS OF PATIENTS UNDER ANTILEPROSY TREATMENT. H. W. WADE, C. B. LARA and C. NICHOLAS, Philippine J. Sc. **25**:661 (Dec.) 1924.

It was noted by Wade et al. that the plain chaulmoogra ethyl esters are irritating, particularly to the tissues at the point of injection and to the respiratory tract, so much so as seriously to limit the intensiveness of treatment. Iodized preparations of the ethyl esters are much less irritating locally, which permit their more intensive use, and they also cause fewer complaints of general symptoms. The 2 per cent. iodized ethyl preparation, heretofore generally used, has according to the data examined, certain minor but not insignificant disadvantages over the plain drug. The 0.5 per cent. iodized preparation is in several respects distinctly superior to the 2 per cent. and, unlike this, in no important way compares disadvantageously with the plain drug. It is, therefore, the best of the three for routine antileprosy treatment.

Society Transactions

MINNESOTA DERMATOLOGICAL SOCIETY

Regular Meeting, Dec. 3, 1924

G. M. Olson, M.D., *Presiding*

Sarcoid of Boeck Occurring in a Tattoo Mark. Presented by Dr. Michelson.

A man, aged 41, stated that he was tattooed on the left forearm thirty years before, the figure being an indigo star and initials. Four months ago, following prolonged exposure to the sun's rays, the tattooed region became very red and itched. A group of papules developed which took the exact configuration of the tattoo mark. The papules were about 0.5 cm. in diameter, nearly circular in outline, and raised slightly above the surface of the surrounding skin. They were deep brown and were distinctly infiltrated. One papule was excised. The microscopic section was demonstrated, which showed practically no change in the epidermis, but immediately beneath the epidermis there was a closely packed infiltrate which was lobulated, and which was made up entirely of epitheloid and round cells. The structure might be termed tuberculoid without any typical tubercles. No giant cells were found. The tattooing pigment was not seen in the microscopic slide. The diagnosis was sarcoid.

DISCUSSION

Dr. Olson stated that a common design of tattooing among the Samoans is a blue bathing trunk. Some of our men in the Navy are tattooed with this design. Dr. Olson stated that he had had one patient who had been tattooed in Samoa with this design. The patient had suffered from severe recurring urticaria, limited to the area tattooed. Urticaria, syphilis and tuberculosis can occur in tattoo marks.

Dr. Michelson said that he had not seen any report in the literature of a sarcoid occurring in a tattoo mark. He had seen reports of syphilitic lesions developing in tattoo marks, and Dore reported a case in which a tuberculous lesion had developed following tattooing. Dore did not state the type of cutaneous tuberculosis. Professor Oppenheim has brought out the fact that lesions of sarcoid structure may develop at points of chronic irritation, i. e., following subcutaneous injections, such as mercury, morphin, etc. In this case possibly the dye acted as the foreign irritant.

Dr. Sweitzer said that in looking up the literature on sarcoid a number of years ago, he came across the work of Oppenheim, who stated that sarcoid could be formed after injection of various substances. He felt that in this particular case one could consider the foreign body as the pigment. The patient still sticks to his story of sudden onset. He also claims that since the condition started there has been no change. The question of therapy was discussed, and the suggestion was made as to the use of carbon dioxid snow. That would probably remove the lesions with the least amount of scarring.

Dr. O'Leary said that the clinical impression was that of syphilis, but the study of the section convinced him that the lesion was a sarcoid. He had been using the Asiatic pill as suggested by Dr. Ormsby in the treatment of

sarcoids, also using the Kromayer light with pressure just short of the blistering point, and he had been decidedly impressed with the results. Dr. O'Leary said that at last month's meeting of the Chicago Dermatological Association, Dr. Mitchell had presented a patient who had had three recurrences of the multiple sarcoids when he discontinued the Asiatic pills, and fairly rapid involution of the lesions when the pills were again started. Dr. O'Leary had not noted that the Boeck type of sarcoid frequently undergoes spontaneous involution.

Dr. Sweitzer stated that he had an idea that the arsenic therapy of sarcoid is worse than the disease as it necessitates taking arsenic over such a long period.

Dr. Olson believed that the best treatment would be cauterization with the small cautery. Saalfeld, of Berlin, removed tattoo marks with the small cautery. Many men preferred the scar from the cautery to the tattoo mark, especially when the tattooing was on the hand.

Purpura Annularis Telangiectodes (Majocchi). Presented by Dr. Michelson.

A man, aged 22, presented because of an eruption confined to the lower extremities, said that he had had a similar eruption when he was 16 years of age, which had largely disappeared. The present eruption had been present some six or eight months, and began with what appeared to be enlarged blood vessels. Following this, the patient had noticed a dark staining of the skin. The center of the spots had itched considerably, and slight scratching had caused crusting. On presentation, he showed telangiectasia, purpuric spots and pigmentation with central atrophy. The lesions were not distinctly annular, but the patient said that he had had annular lesions on the thighs and forearms when the eruption began.

DISCUSSION

Dr. Michelson said that he always hesitated about making a diagnosis of a case which fell in this group, but he felt that this case had all the classical symptoms of Majocchi's disease.

Dr. Felden agreed with Dr. Michelson that this case, showing the symmetrical red-brown macules, clear in the center and with the telangiectatic puncta and pigment peripherally, is one of the most classical examples of Majocchi's disease. He had seen others, but they did not show all the characteristics that this case showed. He felt that there was no doubt about the diagnosis.

Dr. Olson agreed with the diagnosis of purpura annularis telangiectoides because the two cardinal signs were present, i. e., atrophy and annular lesions.

Pityriasis Rosea. Presented by Dr. Sweitzer.

A woman, aged 26, presented a papular type of pityriasis rosea on the trunk.

DISCUSSION

Dr. Sweitzer said that he wanted to show these two cases. Anybody could make a diagnosis, but it just happened that he had two cases of different types. This young lady had the papular type, and the man (see next case) was syphilitic. His eruption was hemorrhagic at first, and it was thought that he might have hemorrhagic smallpox, so no positive diagnosis was made. However, he did not get worse, so a diagnosis of pityriasis rosea was made.

Dr. O'Leary stated that he had seen between fifteen and twenty patients with pityriasis rosea during the last two weeks, and he wondered whether it was becoming a seasonal disease or whether we were in the midst of an epidemic.

Dr. Sweitzer believed that it was due to the fact that people were changing to winter underclothes which had been put away for a long time and then taken out and put right on.

Pityriasis Rosea. Presented by Dr. Sweitzer.

A man, aged 31, presented a typical eruption of pityriasis rosea on the body, legs and arms. The patient also had syphilis, with a positive Wassermann reaction and beginning roseola.

Cheilitis Exfoliativa. Presented by Dr. Michelson.

A young lady, aged 19, had been under treatment for about three months for crusting and scaling of the lips. There were no signs of seborrhea on the rest of the body. Treatment had been unsuccessful until a half strength radium plaque was applied over the entire surface of the lip for fifteen minutes. Two weeks after radiation exfoliation had ceased, and to date had not recurred. Radium was applied two months previously.

Lupus Erythematosus. Presented by Dr. Shapiro.

Mrs. K. R., aged 64, married, had lesions on the scalp, especially on the vertex; also on the left temple, back of the left ear and on the right arm. The area on the scalp covered almost the entire top of the head and was circular in outline. The outer zone of the area showed wide patulous hair follicles, most of them having lost the hair. Toward the center, there were areas of white and red irregularly interspersed. The skin for the most part was very thin, atrophic and shiny. There was a good deal of telangiectasia spread throughout the entire area. In the center, there were superficial areas of ulceration. Most of these were now healed. The lesion on the arm showed scaling.

DISCUSSION

Dr. Michelson said that although lupus erythematosus does occur in the scalp, the Society rarely had an opportunity of seeing such an extensive case. He thought that the case should be treated expectantly as there were no signs of activity.

Dr. O'Leary said that he believed extreme alopecia was somewhat unusual, particularly with so few lesions on the face and the history of no treatment. The lesion on the right arm was more suggestive of a lupus vulgaris than of a lupus erythematosus. The ulceration of the scalp was potentially malignant, and should be observed and treated accordingly.

Dr. Olson said that apparently the patient had typical lupus erythematosus on the scalp, although a lesion as extensive as this was often lupus vulgaris erythematoides.

Pityriasis Lichenoides Chronica. Presented by Dr. Michelson.

A man, aged 58, with a negative past history and a negative Wassermann reaction, was presented because of a generalized eruption which had been

present five months. There were no subjective symptoms. The eruption consisted of numerous scaling macules of a slight yellowish tint and of distinct lichenoid papules of a brownish red. The scales were decidedly adherent. There was no adenitis. Eruption was present on the neck, but no leukoderma had developed.

MALUM PERFORANS PEDIS. Presented by DR. OLSON.

A man, aged 58, with tabes dorsalis, had a deep ulcer of the sole. There was extensive callus formation about the ulcer.

DISCUSSION

DR. O'LEARY offered a therapeutic suggestion in this case. Dr. Henderson had recommended a leather bar placed on the sole of the shoe, about one-half inch thick, preferably opposite the ball of the foot so that the weight would be placed on this bar and the heel, the rest of the shoe sole thus being relieved. Pressure would be removed from the ulcer in this way. The protective pad about the ulcer is also of value. Next to rest in bed with antisyphilitic treatment, this method has offered the best results. We must bear in mind plantar warts and callosities in the differential diagnoses of this type of lesion, particularly so of those that disappear entirely under treatment.

DR. OLSON asked whether that callus was unusual.

DR. O'LEARY answered that it is commonly associated with the trophic ulcers.

DR. FREEMAN said that in his opinion this was a perforating ulcer of the foot, and he did not believe it would ever heal. He recalled two or three cases, all in tabetic persons, as in this case, at the City Hospital, and he had never seen any of these lesions heal. One patient had Charcot hip joint and the ulcer on the foot. The only possibility of healing in these cases is complete disuse of the foot for a long period, and even then they always recur.

DR. TURNACLIFF said that they had had one case of this type at the University Hospital that healed and stayed healed for two years, but that the patient was in bed for two months.

TUBERCULID PRESENTING THE CLINICAL APPEARANCE OF LUPUS ERYTHEMATOSUS OF THE HANDS. Presented by DR. MICHELSON.

Miss A., aged 38, born in Syria, who for the past fifteen years had lived in the United States and had been a grocer's clerk, had an eruption of the fingers and thumbs. Her mother had died of pneumonia; father had died of "bowel trouble"; one sister had died of pneumonia; and she had three brothers living and well. The patient said that when she was 11 years of age, she was taken sick with what was called bronchitis, and she remained sick for two years. Two years before presentation, she had an eruption on her ears and face which lasted about five months. The present eruption began four months ago. On the dorsal surface of the tip of each finger and the thumbs there were slightly elevated plaques of a purplish hue with a central depression. They were sensitive to touch. At the tips of some of the fingers, there was a chewed-out appearance. These areas were covered with a glazed epidermis. At both elbows, there were small white scars. The toes showed similar lesions, although not so many.

DISCUSSION

DR. SWEITZER stated that this case should have been presented before treatment. The lesions were much more evident at that time. It is fairly common on the fingers, and lamp therapy would remove the tuberculids.

DR. MICHELSON thought the history was interesting because the patient had undoubtedly had a juvenile tuberculosis.

THROMBO-ANGIITIS OBLITERANS. Presented by DR. SWEITZER.

In a Jew, aged 23, this disease started two years ago. His right leg had been amputated below the knee. The left leg showed redness and ulcer on the toes.

DISCUSSION

DR. OLSON asked what treatment the patient had received.

DR. SWEITZER replied that the patient had had an operation at the Mayo Clinic, his leg being amputated. The patient had also had diathermy and various internal medications. He also had Abram's treatment.

DR. OLSON asked whether the patient had received Ringer's solution.

MORPHEA GUTTATA (NODULAR TYPE). Presented by DR. MICHELSON.

A woman, aged 62, married, whose husband was in a government hospital with "softening of the brain," had ten or twelve hard, yellowish, distinctly palpable nodules scattered over the body. Besides these nodules, there were small, white, flaccid, sharply circumscribed scars. The scars were of various ages. In some, there was still a semblance of hardness; while others were crinkly and distinctly atrophic. There was no bulging. A new lesion on the lower leg was excised, and the microscopic preparation demonstrated. It showed an atrophic epidermis composed of three or four layers of cells. The pegs were entirely obliterated. The basal layer showed increased pigment. There was no infiltrate, with the exception of a few cells about the blood vessels and glands. The collagen bundles were decidedly thickened and ropey in appearance. The microscopic picture was unquestionably that of scleroderma.

DISCUSSION

DR. MICHELSON said that he at first was unable to make a clinical diagnosis in this case because of the nodular lesions, but the microscopic section was so typical for scleroderma that he was no longer in doubt. This was the type of scleroderma that had been described by Bruhns. Some of the atrophic lesions looked precisely like the lesions in his case of Schweninger-Buzzi disease, except that there was no bulging.

EROSIA INTERDIGITALIS SACCHAROMYCETICA. Presented by DR. SWEITZER.

A woman, aged 44, presented moist patches between the fingers.

DISCUSSION

DR. SWEITZER said the best thing to do in this case would be to have the patient discontinue her present occupation of washing dishes in a bakery. If she would change her work, probably she could be cured.

MACULOPAPULAR SYPHILID. Presented by DR. SWEITZER.

A woman, aged 19, presented a profuse syphilitic eruption on the body and also a syphilitic angina in the throat.

DISCUSSION

DR. SWEITZER said that the patient had an ordinary syphilitic eruption. The interesting part was the syphilitic angina. He thought this was a good case to present to the Society.

DR. MICHELSON said that to him the patient's throat condition was a rather rare form of syphilitic manifestation. It was a true syphilitic angina with membrane formation, and was that kind of syphilitic throat disease that was often diagnosed as acute tonsillitis or diphtheria. Frequently the acuity subsides even without antisyphilitic treatment, when often a tonsillectomy is advised. The throat, after operation, refuses to heal, and more advanced secondary lesions develop, usually of the ulcerating type.

DR. SWEITZER stated that the first eruption of syphilis is not usually attended with lesions of the mouth, but this was undoubtedly the patient's first eruption. This was not a mucous patch; it was a syphilitic angina.

KERATOTIC NEVUS, POSSIBLY BASAL CELL EPITHELIOMA. Presented by DR. MICHELSON.

A man, aged 64, stated that he had had two birthmarks of oblong shape, about 4 by 3 cm. in dimension, and that one of them was in the biceps region of the right arm and the other on the inner surface of the right thigh. He furthermore stated that the lesions had been present since birth and had not enlarged, but that during the past six months the lesion on the arm had pained him considerably and was ulcerating. The lesions were brownish blue, not elevated, but were covered with minute warty projections. The border of the lesion was distinctly rolled and translucent. The lesion on the arm had an ulcer in the center about the size of a dime. Biopsy had not been made.

DISCUSSION

DR. MICHELSON said that he hoped to have a biopsy from the edge of one of these lesions to present at the next meeting.

DR. SWEITZER said that Dr. Michelson had had cases before in which there had been several lesions.

DR. OLSON asked what the treatment would be.

DR. MICHELSON replied that he thought the lesion on the arm should be excised in toto, while the plaque on the leg should be let alone.

ADDITIONAL REPORTS ON CASES FROM NOVEMBER MEETING

LESION BEHIND LEFT EAR. Presented by DR. FREEMAN.

DR. FREEMAN said that when the case was shown the consensus of opinion seemed to be that it was basal cell epithelioma. He made a biopsy and sent a section over to Dr. Michelson, and it proved to be squamous cell epithelioma. The patient has been given radium, and at present had a splendid reaction. Dr. Freeman hoped to show the case at the next meeting.

DENTIST WITH LESIONS ON FACE. Presented by DR. FREEMAN.

DR. FREEMAN said that when the case was shown there was some question as to whether the condition was lupus erythematosus or seborrheic dermatitis. The patient had not had anything put on the lesions since, and they had all disappeared.

D. D. TURNACLIFF, M.D., Secretary.

PHILADELPHIA DERMATOLOGICAL SOCIETY

Regular Meeting, Dec. 8, 1924

EDWARD F. CORSON, M.D., *Presiding*

RHINOSCLEROMA. Presented by DR. G. WOOD (by invitation).

A white man, aged 26, American born of Austrian parents, whose family history was negative, five years ago began to have hardening of the nose, gradually increasing until about four months before presentation trouble in breathing developed. At the same time, he developed sore throat and hoarseness, and his nose became sore. He was first seen in October, 1924, at which time he had almost absolute closure of both nostrils. Biopsy was made on the left side. The pharynx at first looked specific; but on closer inspection it was seen not to be actually ulcerated, but infiltrated, denuded of epithelium and covered with secretion from the nasopharynx. The epiglottis was deformed.

Roentgen-ray examination of the sinuses was negative. The Wassermann reaction was negative, but the patient previously had been treated for syphilis. His general health had been excellent.

There was also a warty excrescence on the side of the nose, a small pinkish nodule.

DISCUSSION

The presenter exhibited colored drawings of the throat.

DR. JAY F. SCHAMBERG said that it was uncommon to see cases which began in the anterior nares and spread backward. He eliminated syphilis because of the extreme condensation and hardness of the tissues and because of the negative Wassermann reaction. He made the diagnosis of lupus vulgaris because of the presence of several active nodules on the body, unlike epitheliomatous lesions, but added that in lupus the throat would show more ulceration than was found in this case. The case was not regarded as one of rhinoscleroma, because the active lesion was not present in rhinoscleroma which was found here.

DR. G. WOOD said that the diagnosis of Dr. Alan J. Smith from tissue sections was that of rhinoscleroma.

DR. F. D. WEIDMAN agreed that the case looked very much like lupus, and that rhinoscleroma usually showed redder tissue and more inflammatory change than was seen in this case; also that rhinoscleroma grew in rather bulbous masses. But if the condition were tuberculous, there would be myriads of the acid-fast organisms in the tissues.

DR. S. S. GREENBAUM remarked on the typical appearance of the lesion on the alae of the nose, which was that of a lupoma. Guinea-pig inoculation had been recommended, but not carried out.

Dr. John H. Stokes said that the hardness of the alae of the nose was the diagnostic point. A similar case of rhinoscleroma which he had seen showed a pharyngeal picture almost identical with this one.

Dr. G. Wood discussed the treatment of this case. First, the patient was given chaulmoogra oil, and a roentgen-ray examination was made. After the report of the tissue section was received, at the suggestion of Dr. Hunter, the patient was started on daily intravenous injections of 5 c.c. of a 1 per cent. solution of antimony and potassium tartrate, increasing to 10 c.c. Dichloramin T was used daily, being injected into the nostrils by a syringe. Injections of tartar emetic were discontinued on November 28 because of nausea and vomiting induced, but the patient had distinctly improved under its use.

Dr. Wood remarked on the fact that this patient was American born—rhinoscleroma being distinctly uncommon in Americans, but rather commonly seen in Austrians.

Pemphigus. Presented by Dr. S. S. Greenbaum.

A. B., a woman, white, aged 41 years, had an eruption of eight months' duration, on the upper part of the chest and back. It had not altered under treatment. The blood showed nothing abnormal. The lesions consisted of inconspicuous blebs which dried to crusts, beneath which was an oozing erosion. Some of these had healed, and left pigmented spots. In all there were about forty or fifty lesions.

DISCUSSION

Dr. F. D. Weidman considered this to be a seborrheic form of psoriasis. The seborrheic distribution and the unusual quantity of scale on the lesions on the chest contributed to this diagnosis. But there were also lesions on the chest different from anything in his experience with psoriasis.

Dr. Edward F. Corson said that he thought there was too much moisture for seborrheic psoriasis, and suggested the diagnosis of pemphigus.

Dr. S. S. Greenbaum called attention to the fact that the blebs were atypical.

Dr. Jay F. Schamberg agreed with the diagnosis of pemphigus, but said it was an unusual case because the lesions presented themselves in the form of flaccid blebs which were very little evident. They ruptured and dried, giving rise to an exudative patch. A similar case was seen by him, which progressed to a fatal termination.

Dr. S. S. Greenbaum said that at first he thought the condition was impetigo, but under closer observation the diagnosis was changed to pemphigus. The patient had been given mercurochrome therapy without results, and had also been treated with two other dyes intravenously, without results. However, he concluded that because of the results usually obtained with the use of mercurochrome, he felt that pemphigus was an infection.

Dr. John H. Stokes asked what constituted pemphigus. The distribution was distinctly seborrheic in type. He asked where pemphigus began and psoriasis left off, and said that this might be a form of disease intermediate between the two conditions.

Dr. Edward F. Corson agreed that the distribution was seborrheic but not psoriatic, and cited a case of lupus erythematosus in which an eruption developed similar to the one shown. The case went to a fatal termination through the usual course of pemphigus.

XANTHOMA TUBEROSA OF THE FACE WITH PERSISTENT FACIAL ERYTHEMA. Presented by DR. S. S. GREENBAUM.

A. P., man, aged 25, was shown by Dr. Jay F. Schamberg in March, 1922, and the case was reported in the ARCHIVES of July, 1922, with the foregoing diagnosis. One year ago, he developed an eruption of plaques on the thorax and abdomen. There were no subjective symptoms. The Wassermann test was negative; the blood cholesterol was 158; the blood sugar, 129. The patient had not been taking drugs.

DISCUSSION

DR. F. D. WEIDMAN stated that the term xanthoma referred in a broad generic way to all the swellings in which there are xanthoma cells. There are a number of other conditions of the skin than xanthoma tuberosum in which nodules may become yellow — such as in the pseudoxanthoma elasticum and localized infiltrations of tissue around sebaceous cysts. Though he was not prepared to dispute the diagnosis, he advised caution in jumping at conclusions. Recently a large tumor of the neck was shown to contain xanthine, and was diagnosed xanthosarcoma, but that was probably because of a cholesterolemia.

Dr. Weidman considered the distribution of the lesions on the body to be that of an erythema multiforme, but thought it was a drug eruption.

DR. JAY F. SCHAMBERG said that the condition had progressed very much during the past two years. Not only were there xanthomas on the face, but there was the persistent erythema, with permanent capillary dilation. When the overlying skin was made tense and the blood expelled, a chamois-yellow color could be seen. The swellings contain large connective tissue cells, multinucleated as a response to the ingestion of cholesterol by the cells. On the anterior surface of the body the lesions did not bear a striking resemblance to those on the face, but the back was erythematous and suggestive of the facial lesions. He thought that the slight papillary elevations on the back might develop into xanthomas.

Dr. Schamberg considered this case extraordinary because of the association of the persistent telangiectatic erythema with the xanthoma tuberosa. In this instance, the cholesterol of the blood was not abnormally high, but other cases have been reported in which cholesterol of the blood was not high. He suggested the possibility of a variance in the blood cholesterol from time to time.

DR. S. S. GREENBAUM said that the facial erythema and the lesions on the body had a distinctly yellow tinge in daylight, when the skin was stretched. He believed that the case was one of xanthomatization; not only was the cholesterol increased, but all lipoids as well; and he considered that xanthomatization is a metabolic disturbance of the face, just as diabetes is a metabolic disturbance of carbohydrates and gout is a metabolic disturbance of proteins.

A CASE FOR DIAGNOSIS. Presented by DR. J. M. SCHILDKRAUT (by invitation).

A white man, aged 27, a constable, whose family history and past medical history were negative, in June, 1924, developed lesions on the back of the hands looking like mosquito bites, which were very itchy. In a few days, these cleared up, they reappeared on the upper arms, and again cleared up. The third eruption was on the neck and shoulders.

The lesions started as lesions the size of pinhead points, very itchy, increasing in size to that of a half-dollar. As they increased at the periphery, they cleared up centrally, and entirely disappeared on reaching the size mentioned. The duration of the lesions was about three weeks.

The Wassermann reaction was negative. The blood findings were: hemoglobin, 88 per cent.; red blood cells, 4,560,000; white blood cells, 8,750; polymorphonuclears, 66 per cent.; lymphocytes, 28 per cent.; transitionals, 6 per cent.; eosinophils, 4 per cent. The patient previously had been treated for ringworm, which treatment had somewhat obscured the lesions. There was no history of taking drugs.

DISCUSSION

Dr. Edward F. Corson remarked that the diagnosis was very difficult because of the appearance secondary to treatment by external applications.

Dr. S. S. Greenbaum said that these cleared up rapidly under arsenic.

Dr. J. M. Schildkraut said that the distribution had made him think of erythema marginata.

Syphilis. Presented by Dr. Carroll S. Wright for Dr. Schamberg.

A negro, aged 28, had had an eruption over the trunk and extremities for one year (?). The eruption was pruritic. Two months before presentation, he developed a penile lesion. This was painless, infiltrated and about the size of a dime. There was a history of a penile lesion three years ago, but no cutaneous eruption at that time. At present the Wassermann reaction was four plus; the Kahn test was also four plus. He had received no antisyphilitic therapy for the past year.

DISCUSSION

Dr. John H. Stokes said that he doubted the accuracy of the patient's history, and expressed the opinion that the lesions were one and the same thing.

Dr. Jay F. Schamberg said that three years ago, the patient had a genital lesion followed by one arsenical injection and treatment by mouth. The eruption, which had been present a year, was a follicular syphilid which was itchy. It was associated with an annulopapular lesion on the shaft of the penis.

Lichen Planus. Presented by Dr. Maurice Brown.

A colored man, aged 40, had an itchy eruption of nine months' duration. It had appeared first on the thigh and had spread over the rest of the body. It looked like lichen planus.

DISCUSSION

Dr. Jay F. Schamberg said that lichen planus is uncommon in colored persons, but is not particularly rare. He mentioned several cases of post-arsphenamin eruptions resembling lichen planus.

Dermatitis Factitia. Presented by Dr. L. E. Strohm.

A white woman, aged 27, unmarried, complained of burning areas on the skin which broke down in a few days, and developed a yellowish bases which turned gangrenous. There were scars all over the body, and the patient had lost two fingers from gangrene. She was seen several years ago, and at the time she had a number of gangrenous lesions. The first lesion was on the face, developing as a result of caustic accidently applied while at work.

DISCUSSION

Dr. Maurice Brown said he believed that the case was one of dermatitis factitia.

Dr. Jay F. Schamberg agreed that it was suspicious that these lesions were self produced, and mentioned the lengths to which such patients will go in self mutilation. But he made the reservation that a peripheral nerve origin might be possible, as in a famous case seen several years ago in which the diagnosis rested between that of a hysterical condition and that of a condition of peripheral nerve origin. To prove the cause, it would be necessary to place the patient in a hospital with her arm in a splint, under close observation. In the case presented, it was important to note that there have been no lesions on the back.

Dr. Edward F. Corson agreed with the diagnosis of dermatitis factitia and brought out the point that the patient had tried to blame her employment for the lesions and to hold her employer responsible.

Patricia Hart-Drant, M.D., Secretary.

MANHATTAN DERMATOLOGICAL SOCIETY

Regular Meeting, Dec. 9, 1925

Max Scheer, M.D., *Chairman*

Hansen's Disease. Presented by Dr. Wise.

A girl from the West Indies, had been shown on two previous occasions. She presented areas of leukoderma on both knees. The changes in these areas have been about 3 inches (7.6 cm.) in diameter. There were also small patches on both arms similar to those on the knees. There was a mild degree of anesthesia in all of these patches. On the back were six pea-sized, atrophic, deeply pigmented areas which were also mildly anesthetic. The Wassermann blood reaction was negative. Two examinations of the nasal secretion were negative. Further examinations will be made of the secretions of this patient for the lepra bacillus.

DISCUSSION

Dr. Ochs remarked that the thickening of the ulnar surface, together with the rest of the symptoms would lead one to agree with the diagnosis. However, he felt that a neurologic examination would help to confirm it.

A Case for Diagnosis. Presented by Dr. Wise.

A woman had dystrophy of the nails. She had had this condition for ten years, and presented a distinct longitudinal striation and distortion of the nail of the index and middle fingers of both hands, and a beginning dystrophy of the other nails. Also, the nail on the large toe of the right foot showed an onychauxis which had been present for sixteen years. Since no decision could be reached, either as to diagnosis or treatment, she was presented at this meeting for suggestions.

DISCUSSION

Dr. Satenstein stated that he had seen some cases at the City Hospital a year before with epidermolysis, in which the nails were similar to these. He

would therefore suggest that Dr. Wise investigate this case to determine whether any history of epidermolysis could be found. The patient's skin was very irritable, and on the least provocation, became mottled, which might be suggestive of epidermolysis.

Dr. Wise said that Dr. Satenstein's suggestion would be seriously considered, because he too had noticed that many patients who had epidermolysis showed such a condition of the nails as the one presented by this patient. However, such patients had epidermolysis, while this patient never had it, according to her history. Dr. Wise said further that he would follow Dr. Rosen's suggestion concerning the use of hot and cold water therapy. It was a harmless procedure and might possibly do some good.

Lupus Erythematosus of the Face and of the Mucous Membrane of the Mouth. Presented by Dr. Oochs.

A man, aged 43, seen by Dr. Ochs for the first time only three days prior to presentation, had areas which showed patches of lupus erythematosus on both sides of the mouth. There was also a patch of lupus erythematosus on the scalp, side of the neck, lips and buccal mucosa. The patient claimed that he had had these, periodically, for from five to fourteen years.

DISCUSSION

Dr. Parounagian said that he had presented the same patient with the same diagnosis at a meeting held at his home. The condition had progressed much further since the last time he had seen the patient.

Dr. Satenstein stated that they had had a patient with this condition at the Vanderbilt Clinic, who had been treated by Dr. Ochs and Dr. Dietrich for extensive lupus erythematosus of the face. This patient, a woman, had been presented at the society a number of times. She had been treated with carbon dioxid, and a year ago she came back with lesions similar to those which this patient showed in his mouth. Dr. Cannon removed the lesions with electrocoagulation, and obtained a very good result. She was recently developing another lesion in the nasal mucosa.

Dr. Levin said that some cases of lupus erythematosus had been treated at the Cornell University Medical Clinic by means of endothermy, with good results and the production of fine scars. The unipolar method had been employed, and the needle inserted superficially into the skin.

Secondary Syphilis (Anal Infection). Presented by Dr. Parounagian.

J. L., aged 60, unmarried, a clerk, was referred to the Bellevue Syphilis Clinic on Dec. 2, 1924, showing a marked papulosquamous eruption which involved the entire body. Palmar and plantar syphiloderms and condylomas about the anal region were present, and there were general lymphatic swellings. He gave a history of a genital sore forty years previously, but did not recall having received any systemic treatment. He positively denied exposure for at least three years, and no evidence of genital syphilis could be detected. After exhaustive questioning, a history was elicited which threw light on the question. During the Democratic convention, he had had a male friend, 60 years old, visiting him from a distant city, who had occupied the same bed with him. A Wassermann test made on Dec. 2, 1924, was reported four plus, and he was placed under treatment. The eruption was said to have been of about six weeks' duration.

Dr. Parounagian said that in this case some circumstantial evidence would have to be considered in confirming the diagnosis. The man was 60 years old. He had been questioned carefully, but said that he had not had sexual relations with women for more than three years. He had no genital lesions when he was seen a week prior to presentation, but had shown enormous condylomatous lesions at the anal region. In addition, a history was obtained of his having had a male friend visiting him during the Democratic Convention, who had slept in the same bed with him for a month. Dr. Parounagian's personal observation had been that the condylomas which occurred in a genital infection were more or less discrete and elevated, whereas in anal infections there was usually found a certain macerated, grayish appearance of the anal region which was characteristic. Taking all these things into consideration, there should not be much doubt as to the diagnosis of anal infection. The condition had existed for two or three months, and it was impossible to see it as clearly as when it had first appeared.

Idiopathic Atrophy of the Skin of the Buttocks, Thighs and Gluteal Region. Presented by Dr. Wise for Dr. Eller.

C. S., aged 50, had had this condition for more than twelve years. Roentgenograms of the teeth were negative. A Wassermann test of the blood was negative, and there was no history of treatment. The patient's general health was apparently good, except for a moderate deafness, which he said had been present since the Civil War, of which he was a veteran. He presented a distinct atrophy and telangiectasis, with wrinkling of the skin of the scrotum, penis and buttocks. This has been present for twelve years. It had started in a mild form at that time, and had been almost as at present for ten years. His chief complaint was the effect of change in temperature, such as irritation during cold weather. During the past year while under Dr. Eller's observation, the atrophy has been spreading gradually, and two new patches had appeared on the lower part of the thighs posteriorly.

DISCUSSION

Dr. Satenstein stated that he had never seen any idiopathic atrophy without an advancing, infiltrated margin. In this case there was no sign of infiltration, the skin being practically smooth. It looked more like the remains of some chronic inflammatory process.

Dr. Levin agreed with the diagnosis. An infiltrated border was not necessarily present in cases of primary atrophy; the border was at times elevated above the surface of the surrounding skin, but even this showed atrophy under the microscope.

Dr. Wise said that Dr. Satenstein's restrictions were unknown to him. He had seen a few of these cases and had never noticed that there was any palpably infiltrated border, although an edematous edge did sometimes occur. Usually there was a violaceous zone and a red periphery. The lesion at its edges might show some infiltration under the microscope. However, from the evidence presented, he felt that there could be no other diagnosis except simple cutaneous atrophy of unknown cause.

Hypertrichosis Treated by the Roentgen Rays (Effects of Treatment). (Previously Shown). Presented by Dr. Parounagian.

Miss W., aged 29, had consulted a physician who treated hypertrichosis with the roentgen rays. She had received the treatments in 1917, 1919 and

1920. At first she had received ten-minute exposures every other day for two months, and later twice a week for about two months; after that as the hairs appeared she would have more treatment. She presented a typical roentgen-ray dermatitis, showing marked atrophy, pigmentation and telangiectasia. The patient wished to have this condition remedied if possible.

DISCUSSION

DR. OCHS said that the Pathe News had shown pictures of hair being removed by the roentgen rays, revealing the process used and the result accomplished, and recommending its employment.

SYNOVIAL LESIONS OF THE HANDS. Presented by DR. LEVIN.

C. H., aged 36, a man, a cashier, had had the condition for which he was presented on the left hand for more than a year. More recently, it had appeared over the interphalangeal joints of the right hand. He presented lesions on the dorsum of the fingers of the left hand and on the ring finger of the right hand. The lesions varied in size from that of a pea to that of a bean, were red, elastic and firm, tender when pinched, and movable over the bone.

DISCUSSION

DR. SATENSTEIN remarked that on palpation of the lesions he could detect no suggestion of cysts. They merely looked like the heads of the bones enlarged.

DR. GILMOUR said that he believed these were cysts. He had moved them on the fingers sideways and up and down. The only question which had presented itself to him was that of their origin, whether they arose from the joint or from the tendon.

DR. LEVIN added that clinically the lesions were globular, elastic and somewhat firm. They did not feel like bone and were movable. They corresponded in every way with descriptions by writers on synovial cysts.

DR. SCHEER stated that few of these lesions had been excised for microscopic study. He had excised a lesion in a case which had not responded to roentgen-ray therapy, and the microscopic examination had revealed it to be a giant cell sarcoma. He thought these lesions should be excised and studied.

LEUKEMIA CUTIS. Presented by DR. SCHEER.

The patient was referred from the medical department of the Mount Sinai Hospital for a diagnosis of the skin lesions. He was 56 years old and married. He showed enlargement of the submaxillary glands, which had been present for more than three years. The lesions on the face had been present for a few months. His blood count several years ago had shown 200,000 white blood cells, which had diminished after roentgen-ray treatment of the glands. On the forehead and cheeks were about half a dozen raised, shiny, pinkish, semitranslucent nodules. The largest was about one-half inch (1.2 cm.) in diameter. A biopsy had not been made.

DISCUSSION

All the members agreed with the diagnosis.

DERMATITIS MEDICAMENTOSA. Presented by DR. SCHEER.

A woman, was born in Columbia, South America, had come to the Mount Sinai Hospital on Nov. 25, 1924, with an eruption on the hands which had been present for a year. At that time her husband had come with her, and it was with a great deal of difficulty that a vague history of her having taken candy and cathartics, besides headache powders, was obtained. There was a possibility of her having ingested acetanilid. The eruption consisted of circular and oval macules from one-fourth inch (0.6 cm.) to one inch (2.5 cm.) in diameter. The color was violaceous. They were situated on the chin, forearms and hands.

DISCUSSION

DR. GILMOUR said that he had asked this patient about the condition, and she had stated that it itched intensely. She also gave a history of numerous blisters before this eruption had finally appeared. This would bring up the question of the possibility of eczema.

DR. SCHEER declared that the formation of vesicles and bullae and even itching was not uncommon in dermatitis medicamentosa.

DR. WISE agreed with the diagnosis. He had seen eruptions like this, but usually they had appeared on other parts of the body.

DR. LEVIN said that he had presented a case a month before at the meeting of the skin section of the Academy of Medicine, in which the patient had showed only three lesions caused by the ingestion of phenolphthalein. He stated that it was possible to have a limited distribution of the lesions. His patient had only three insignificant lesions when he first saw her, but twenty-four hours after the ingestion of two Ex-Lax tablets as a diagnostic test, the lesions had become more inflamed, and pruritus became intense.

PITYRIASIS RUBRA PILARIS. Presented by DR. LEVIN.

H. E., aged 37, a man, a clerk, complained of a persistent, intensely itching, universal eruption of seven years' duration. His past history showed that he had had some skin trouble at the age of 3. There was a skin eruption after he had suffered an attack of pneumonia when he was 12 years old. His present condition appeared seven years prior to this presentation in the form of red, hard spots, accompanied by intense itching. He had been treated at that time at the Fordham Hospital in the service of Dr. Ochs, where he had been admitted with the clinical diagnosis of pityriasis rubra pilaris, which was confirmed by a study of the tissue. Since the very first appearance of the eruption, the lesions had tended to become confluent, and they quickly spread to cover the whole body. Various forms of treatment were used without any effect until five months before presentation, when he was first seen by Dr. Levin, who prescribed technical cold tar, which the patient stated was the only thing that had seemed to give him any relief, and had changed the appearance of the eruption. When presented, he showed a universal eruption made up mainly of erythroderma and exfoliation. The skin of the whole body was dark red, infiltrated and scaly. Large areas, as over the buttocks and shoulders, showed lichenification. Scattered over the body, besides the generalized hyperkeratosis, there were hyperkeratotic papules of the pilosebaceous follicles. The dorsa of the phalanges of the fingers were covered with small, elevated, hyperkeratotic papules pierced by short, broken, black hairs. The scalp was red, swollen, and covered with thick layers of scales. The palms and soles showed ptylosis. The Wassermann test of the blood

was negative on three occasions, and the blood chemistry showed a sugar content of 0.95 per cent., urea nitrogen 13.8 mg., uric acid, 3.6 mg. per hundred cubic centimeters of blood. The blood revealed 4,200,000 red blood cells and 15,400 leukocytes. A differential blood count revealed 72 per cent. polymorphonuclear leukocytes, 8 per cent. lymphocytes, 4 per cent. eosinophils, 2 per cent. transitional cells and 14 per cent. mononuclear cells.

DISCUSSION

DR. BECHET said that he did not consider the eruption a typical pityriasis rubra pilaris. He was, however, prepared to accept that diagnosis tentatively, but felt it would require further observation before a definite diagnosis could be made.

DR. WISE disagreed with the diagnosis of pityriasis rubra pilaris, stating that although a universal eruption was possible in this affection, the characteristic lesions of the disease were absent in this case, at least at the time of presentation. He believed the condition to be one of universal lichenification. It was a type of eruption which the older dermatologists were in the habit of calling chronic generalized eczema.

DR. OCHS said that he had treated the patient about two years before. A biopsy which he had taken at that time had revealed pityriasis rubra pilaris. When he had first seen this man, his whole body had been affected, but there had been areas of normal skin. The man's body at this presentation looked much better than it did a year ago.

DR. WISE expressed the belief, in spite of Dr. Ochs remarks, that a diagnosis of pityriasis rubra pilaris could not be made from this evidence and the microscopic findings alone. Two years before, this patient may have shown pityriasis rubra pilaris, but he certainly did not show it at this presentation.

DR. OCHS replied that when the patient had been shown the last time, he had presented exfoliation from head to foot. He had been seen by other dermatologists, and they had agreed that it was pityriasis rubra pilaris. The diagnosis had been confirmed by clinical and microscopic evidence.

DR. LEVIN stated that the patient showed eczematoid as well as lichenified areas which may be found in neurodermite, but besides these lesions he also presented hyperkeratosis with distinct hyperkeratotic papules on the body, and the posterior aspect of the proximal phalanges of the fingers showed characteristic hyperkeratotic follicular papules, pierced by broken-off hairs. The point was made in the discussion that pityriasis rubra pilaris always showed areas of normal skin. Dr. Levin wanted to call attention to the fact that this disease does not only show erythema with hyperkeratotic follicular papules but may also show psoriasiform lesions as well as ptylosis, and may even develop large eczematoid areas. It may become universal, even involving the mucous membranes of the mouth. The eruption was somewhat modified by the use of carboneol, and this was the only preparation which had given the patient any relief.

VINCENT'S DISEASE. Presented by DR. PAROUNAGIAN.

Abraham R., aged 48, a Russian, applied to the Bellevue Clinic on Oct. 23, 1924, for the treatment of a number of sores in his mouth which were said to be of about four months' duration. He admitted having had a sore on the glans penis twenty years previously, which had been treated by internal medication. Examination of the mouth revealed a number of superficial ulcera-

tions of varying sizes, covered with gray membranes, situated on the left side of the buccal mucosa, which were tender to manipulation. The Wassermann tests of the blood on Oct. 23, Nov. 6 and 18, 1924, were negative. The patient was given three injections of neo-arsphenamin on Oct. 23, Nov. 13 and 20, 1924; but the condition persisted. Laboratory examinations on Dec. 8 and 9, 1924, were negative for fusiform bacilli. In spite of negative laboratory findings, however, the clinical diagnosis of Vincent's disease was the only probable diagnosis which could be made.

DISCUSSION

DR. SATENSTEIN said that these cases nearly always improve on intravenous therapy, but sometimes become worse.

DR. LEVIN remarked that only a few days prior to this meeting, Dr. Goldenberg, in conference with him, had stated that intravenous injections of arsphenamin may be used in Vincent's angina with local treatment, without any ill effects.

SYPHILITIC REINFECTION. Presented by DR. PAROUNANIAN.

(This case was previously shown, December, 1924, before the New York Academy of Medicine.) C. C., a tailor, aged 24, born in Cypress, was first seen at the Bellevue Syphilis Clinic on July 21, 1924. He showed multiple sores at the prepuce, and a dark-field examination for *Spirochetae pallidae* was positive. A Wassermann test performed on two occasions, July 21 and 28, 1924, was negative. He was given eight injections of arsphenamin and fifteen of mercuric salicylate, the last injection having been given on Nov. 3, 1924. On Nov. 17, 1924, he returned, with a new lesion on the left side of the prepuce which was sharply circumscribed and indurated, resembling a typical chancre. He acknowledged repeated exposures.

The Wassermann test on Nov. 20, 1924, was reported negative, but a dark-field examination for spirochetes was positive. Six subsequent examinations revealed positive findings.

DISCUSSION

All the members agreed with the diagnosis.

EXTENSIVE SECONDARY SYPHILIS (ANAL INFECTION). Presented by DR. PAROUNAGIAN.

F. C., an Englishman, aged 33, unmarried, was seen at the Bellevue Syphilis clinic on Dec. 6, 1924, when he presented a marked generalized, papular eruption, mucous patches in the throat and condylomas about the genito-anal regions. The interesting feature in this case was that the patient absolutely denied having had any sexual relations with women, and no chancre could be detected about the genitals.

The enormous swelling of the femoral glands aroused our suspicion of possible anal infection, and further questioning confirmed our opinion, since the patient admitted having had sodomy performed on him about six months previously. The duration of his eruption was said to be about six weeks. He charged this eruption to the barber, stating that the "rash broke out right after getting shaved by a barber." A Wassermann specimen was taken, but the findings had not yet been reported.

DISCUSSION

All the members agreed with the diagnosis.

NEW ENGLAND DERMATOLOGICAL SOCIETY

Quarterly Meeting, Dec. 10, 1924

HENRY J. PERRY, M.D., *Presiding*

A CASE OF PSORIASIS. Presented by DR. JOHN G. DOWNING.

A boy, aged 3, had patches of psoriasis on both elbows and on one knee. The diagnosis was confirmed by other men. The interesting point was that a blood Wassermann test was negative; the blood nitrogen was normal, but there was hyperglycemia. The mother had been feeding the child an excessive amount of sugar. With no other treatment than a little olive oil externally, and reducing the carbohydrate intake, the psoriasis cleared up in three weeks. There was a history of psoriasis in the father. The case is also of interest on account of the extreme youth of the patient. Another blood sugar test will be made.

TUBERCULOSIS VERRUCOSA CUTIS. Presented by DR. WALTER T. GARFIELD.

A young man, a golf caddy master, had a peculiar lesion on the foot below the external malleolus, of two years' duration, which was not painful. The initial lesion was caused by the prick of a nail. He showed no other evidence of tuberculosis. The lesion was much softer than usual in this disease, and had none of the keratotic surfaces. Biopsy had not been made. A tentative diagnosis of tuberculosis verrucosa cutis was made.

PAPULAR URTICARIA. Presented by DR. JOHN G. DOWNING.

A boy, aged 9, had lesions on the forearm, on the anterior surface of the body, and one or two on the face, of three years' duration. The condition started as a generalized itching three years before presentation. At that time, he was treated for scabies, and he showed various excoriations and papular lesions. He was treated for scabies at various times, but received no benefit. These papular lesions had continued to appear and excoriations and a resulting scar formation remained. Various diets had been tried without result.

DISCUSSION

DR. BOARDMAN said that he thought the patient rather too old to have papular urticaria.

DR. BLOSSER believed that the condition might be a mild form of prurigo.

A CASE FOR DIAGNOSIS. Presented by DR. J. S. BRAGG.

A woman, aged 34, married, who had two healthy children, whose family and personal history was negative, ten or eleven years before presentation had a small papular lesion in the right axilla. This finally suppurated, leaving a discharging sinus with numerous small papules or pustules surrounding it, which gradually spread around the axilla. Shortly afterward, in the other axilla the same condition developed, the hair becoming brittle. Three years later, it appeared on the pubic area with the same process. The discharging sinuses became blocked, causing small abscesses which were very painful, and the parts became irritated. Burning, itching and smarting were present most of the time. The lesions were limited to the axillae and the pubic area. There was no sloughing. The axillae had been laid wide open by linear incisions

several years before. The laboratory findings showed that the patient had a mild interstitial nephritis which dated back at least five years. Examination of the discharge revealed gram-negative intracellular and extracellular diplococci. There was no growth on agar-agar. The Wassermann test had been taken several times; the first two tests were positive, the last one negative. Biopsy showed increased inflammatory, fibroid tissue of polypoid variety. The treatment had been antisyphilitic, and recently roentgen-ray therapy had been used. For a time, while the antisyphilitic treatment was employed, she improved. Then the condition became stationary. Roentgen-ray treatment was then started, showing improvement for a short time, and then becoming stationary.

DISCUSSION

DR. PERRY said that some of the pigmentation resulted from the roentgen-ray exposure.

DR. TOWLE expressed the belief that the evidence pointed toward syphilis.

DR. LLOYD said that the condition was not syphilis.

DR. OLIVER asked Dr. Bragg whether sporotrichosis had been considered.

DR. BRAGG replied that they had not been able to find the sporothrix.

DR. PERRY asked whether granuloma had been considered.

DR. BRAGG said that as the lesions tended to spread from the pubic area to the thigh and as two or three lesions seemed to be typical of granuloma, he had had that diagnosis under consideration.

DR. BOARDMAN said that a case of granuloma inguinale, which was shown to the Society, had deceived physicians for some time, and that the lesions on the vulva in this case looked very much like those in the case that he referred to. In that case also there was a partial response to antisyphilitic treatment.

DR. BLOSSER gave it as his opinion that the condition might be a dermatitis papilaris capillitii, although he had never heard of that disease limited to the axillae and pubes. However, he thought it should be considered.

DR. CHEEVER said that he had a case that was almost similar to this, which had been present for six or seven years. *Staphylococcus pyogenes-albus* was found. Ultraviolet rays were used, and the patient is definitely better than he has been for many months.

DR. WRIGHT said that from the description of the case and from the fact that intracellular and extracellular diplococci were found, it might be an infection of the granuloma inguinale type.

DR. TOWLE asked how the four plus Wassermann test was explained if the condition were not syphilis, but a disease superimposed on syphilis.

DR. LLOYD explained the condition thus: The patient had syphilis, which improved under antisyphilitic treatment, and then developed another infection.

DR. TOWLE from that explanation made the deduction that this was a double infection.

DR. C. MORTON SMITH said that he did not believe that the positive blood test meant a syphilitic infection. He thought that whatever was causing the patient's condition produced the positive Wassermann reaction. Whether it was an unusual form of granuloma inguinale, he was not sure. He had an indefinite recollection of a case that looked as the broken down labia in this case did.

GUMMA OF THE SCLERA. Presented by DR. HENRY D. LLOYD.

When the patient, a girl was shown at a previous meeting, she had what was believed to be a gumma of the sclera. Under intensive antisyphilitic treatment that had cleared up, and only a little injection remained. As the right eye was clearing, a certain amount of injection became visible in the left eye, which had been present for the last three weeks, together with a certain deformity of the left sclera, not as marked as in the right eye. She was sent to Dr. Quackenboss, who stated that the process in the left eye had not gone as far as gummatous formation, and he thought it was scleritis. She had received nine injections of arsphenamin and two courses of sulpharsphenamin. She had received large doses of iodid, up to 300 grains a day, and inunctions administered by her mother. She was thought to be on the road to recovery. She was first brought to Dr. Lloyd's attention several years before on account of several discharging sinuses of the knee, which seemed to be syphilitic and which healed under antisyphilitic treatment.

DISCUSSION

DR. BOARDMAN asked whether a syphilitic lesion of the sclera was not uncommon.

DR. LLOYD replied that it was uncommon.

DR. BOARDMAN said that he had a patient sent to him with a diagnosis of nonsyphilitic scleritis, but with a positive Wassermann reaction, the condition had cleared up under antisyphilitic treatment.

GRANULOMA INGUINALE. Presented by DR. WILLIAM P. BOARDMAN.

A woman, aged 49, a housewife, had been shown to the Society last spring. She had considerable pain around the introitus, and on examination was found to have an ulcerated tumor of the groin and a cauliflower growth of the cervix with some atresia of the vagina, so that she could not be examined without ether. Specimens were examined by Dr. Mallory, who reported chronic inflammation with no sign of malignancy. She had two positive Wassermann reactions and two negative reactions. Antisyphilitic treatment was then tried, but with no effect. Roentgen-ray treatment had the same result. During the summer, the staff in the gynecologic service suspected granuloma inguinale. Dr. Wright reported finding the organism in the deeper pus. The patient received two doses of tartar emetic intravenously, but they caused such a severe inflammatory reaction that no more was given. She had since been transferred to the Tropical Medical Service, and was shown through their courtesy. Some of the physicians believed the condition was malignant, but, as one of them said: "chronic inflammation" does not amount to much. "F. B. Mallory" signed to the report, however, amounted to a great deal. The patient had lost much weight and strength, but there had been no signs of metastasis. The growth on the cervix could not be accounted for except as growing through from the groin and introitus. The slides under the microscope showed endothelial leukocytes containing intracellularly these diplococci structures, some with a definite capsule. Under one microscope was a slide which showed the organism contained in these leukocytes in a section of tissue.

DISCUSSION

DR. PERRY said that more intravenous injections of tartar emetic should be tried.

Dr. Lloyd asked whether there was any extravasation at the site of injection when the intravenous injections were given.

Dr. Boardman said he did not know about that as he was not present when the injections were given in the gynecologic department. However, they told him that the patient tolerated the injections poorly.

Lichen Chronicus Circumscriptus. Presented by Dr. J. L. Grund.

A woman, aged 43, married, whose mother and one brother had died of tuberculosis, whose past history was negative, and who partook of large quantities of tea, since she was 10 years old, at varying intervals had had the skin disease presented. It was characterized by an attack of itching, lasting varying periods of time, which was followed by the appearance in sequence of scaling, papules, erythema and, finally, lichenification. The upper inner aspect of the right thigh was the region invariably attacked. She was given a soothing lotion which stopped the itching. The skin condition would clear up rapidly under treatment, and after an absence of one to two years, would reappear. In view of the fact that she always had itching before the appearance of the skin involvement, and that when it came it was in the form of a large, well-defined violaceous-appearing area with cross-hatching, it was thought that the disease should be placed in the category of neurodermite of Brocq or lichen chronicus circumscriptus of Vidal.

DISCUSSION

Dr. Blosser said that he thought there was no question about the diagnosis. He suggested that roentgen-ray treatment should be tried.

Tertiary Syphilis or Epithelioma (?). Presented by Dr. William P. Boardman.

P. J. K., a motorman, aged 40, had had syphilis twenty years before presentation. Following operation for a broken nose four years before, the patient had noticed a scaling spot on the right side of the nose, which bled when the scales were removed. When first seen three years before, he showed a scar on the right side of the nose, surrounded by a nodular, raised border and covered with scales. The Wassermann test was strongly positive. He was given radium for one hour, $\frac{1}{10}$ aluminum filtered, 10 mg. half-strength plaque. Six days later, the scar broke down, and showed several small circular ulcerations. He was given one course of arsphenamin with inunctions of mercury, and potassium iodid. One month later, the sore healed. He was irregularly treated for syphilis on account of technical difficulties, and the scar broke down again a few months later. Under further antisyphilitic treatment, the nose healed again, except for a small crusted area in March, 1923. In September, 1923, he was given a short course of sulpharsphenamin with potassium iodid, followed by ten doses of bismuth iodid. The sore was still spreading. Under Kromayer light treatment, it had spread more rapidly. Radium, on March 27 and 28, was used for two hours. Radium was also used on May 23, August 11, and September 9. The lesion was healed on October 2. Slight breaking down recurred on the left side, and radium was used again December 3. Dr. Boardman said that his diagnosis was a syphilitic lesion originally, which had become malignant. He had no pathologic report to present.

DISCUSSION

DR. LLOYD declared that the positive Wassermann test did not impress him as proving that the condition was syphilitic.

DR. CHEEVER said that except for the depth of the lesion, the condition appeared to be lupus erythematosus. There was definite scaling on both sides, and there were two or three nodules that seemed consistent with active lupus erythematosus.

DR. PERRY said that as he saw the case, he was not convinced that it was epithelioma, but that it was not fair to judge after so much radium treatment had been given.

DR. BOARDMAN added that the patient had a definite attack of syphilis. The skin condition had cleared up twice under antisyphilitic treatment, but the third time it had no effect, and bismuth and arsphenamin were used. The last time it had cleared up under radium treatment.

DR. LLOYD said that he had several cases of a similar type, of an undoubted syphilitic nature, but they had shown no tendency to break down following antisyphilitic treatment.

DERMATITIS HERPETIFORMIS (?). Presented by DR. GARFIELD.

C. F., a woman, aged 33, married, a housewife, since childhood had had lesions on the back. They itched intensely at times. The original lesions were vesicles. They were more or less grouped and not confined to any one part of the body, although when presented they seemed to be more profuse on the sacral region. There were crusted, excoriated, ulcerative lesions and many healed ones leaving cicatrices. About two years before presentation, she had had a positive Wassermann test, following an attack of pneumonia. She had been given about twenty injections of arsphenamin and twenty of sulpharsphenamin, without any effect in changing the lesions or the Wassermann tests. Recently, she had been given five injections of bismuth at weekly intervals. The iodoquinin of bismuth was used. She had had no new lesions since getting the bismuth, and the itching had been less intense. The biopsy report was as follows: "In the center of the lesion is a thickening of the epidermis, with slight extension into the corium. One prolongation contains several mytotic figures and is infiltrated with numerous polymorphonuclear leukocytes, a few endothelial leukocytes, and an occasional eosinophil. The stroma shows numerous lymphocytes, plasma cells and eosinophils grouped for the most part around blood vessels. Beneath the thickened epidermis the stroma is somewhat cellular, owing to moderate proliferation. Levaditi stain, negative. Diagnosis: Slight chronic inflammation, with reparative changes in the epidermis. Cause of lesion not evident." My diagnosis has always been dermatitis herpetiformis.

DISCUSSION

DR. CUMMING said that the case was suggestive of a dermatitis factitia.

DR. GARFIELD expressed the opinion that it would be difficult for the patient to produce the lesions herself in some parts of the body where they appeared. The only alternative was that somebody had done this for her, which was hardly likely.

DR. CUMMINGS remarked that the lesions were on the sides of the back, while the center was free from scars.

Dr. Garfield stated that the patient did not appear neurotic, and when she received antisyphilitic treatment nothing was said about these lesions, either by herself or by physicians. They were thought to be syphilitic, but they did not respond to antisyphilitic treatment.

Dr. Cummings remarked that there was one on the back which was straight.

Dr. Chase said that he thought those on the upper part of the back were strongly suggestive of dermatitis factitia.

Dr. Lloyd declared that the length of time would be against syphilis.

Dr. Swartz said that to him it appeared to be dermatitis factitia, and that the parts affected could easily have been reached by the patient.

Dr. Casselberry agreed with Dr. Garfield's diagnosis. He had had a similar case at the dispensary, which had started in childhood, as this one had, and which had led up to lesions almost similar to these. In his case, the lesions were perhaps more bullous in type. He thought that with such a large area covered, it was hardly fair to assume that the condition was a dermatitis factitia.

Dr. Garfield said the fact that the pathologic report showed numerous eosinophils around the lesion was against the diagnosis of dermatitis factitia. He did not believe that one found that condition in factitia, but one does in dermatitis herpetiformis.

Dr. Swartz said that he did not believe the eosinophilia would favor dermatitis herpetiformis, as constant irritation would likewise cause eosinophilia.

Dr. Perry asked whether anything had been done in regard to foci.

Dr. Garfield replied that the patient's teeth had all been examined.

Dr. Swartz said that examination of the blood would be interesting; one would expect eosinophilia in the blood if the condition were dermatitis herpetiformis.

Dermatitis Herpetiformis. Presented by Dr. Downing.

A boy, aged 8, had been shown before all the hospitals in Boston. He had received numerous lamp treatments and solution of potassium arsenite (Fowler's solution) and local applications. He now had only a group of more or less pigmented lesions on the forearm. Previous to last June, his body practically had been covered with true vesicular lesions. He had had the condition for two and one-half years, with practically no result from treatment, until his tonsils and adenoids were removed, when rapid amelioration of all lesions was noted. Under lamp treatment, he apparently became worse rather than better.

Parapsoriasis (?). Presented by Dr. Boardman.

R. N., a man, aged 25, unmarried, an American, shown at the last meeting, had had a round, red, scaling eruption on the inner side of the right thigh four weeks previously. Then new lesions appeared on the thigh, abdomen and axillae. On entrance, the rash was generalized, consisting of scaling dark red macules — some eroded and excoriated, fairly symmetrically arranged, others in a circinate arrangement. The patient complained of severe itching. He was treated with sulphur and lard for three days, with distinct relief. New lesions continued to develop during the next two weeks. During October, he received mercury protiodid. He had received solution of potassium

arsenite (Fowler's solution) for the past month. During November, the pigmentation of the lesions increased. Three new lesions were noticed on the dorsum of the right hand. There had been no itching for the past two months. The Wassermann test was repeatedly negative. Parapsoriasis, pediculosis corpuris, and other conditions were considered. Pityriasis rosea was mentioned, but on account of the pigmentation this diagnosis was thought improbable.

DISCUSSION

DR. CASSELBERRY expressed his belief that it might be a case of phenolphthalein eruption, as the color of the lesions bore certain of the characteristics of that eruption. Of course the history did not indicate that, but phenolphthalein is used as a laxative by so many people that he thought it was well worth looking into.

DR. BOARDMAN said that it did not appear like that condition to him, but it seemed worth investigating.

PELLAGRA. Presented by DR. GARFIELD.

J. P. M., a man, aged 52, a laborer, for the past six years had had an eruption on the back of the hand, recurring in the late winter and spring each year. The present attack began a few weeks before presentation, following prolonged alcoholic excess. The lesions started as an erythematous and scaling eruption on the dorsa of the hands, extending around to the anterior surfaces on the wrists, and were followed by a weeping condition after exfoliation. The skin was now thin, shiny and atrophic, with slight scaliness. On entrance, the tongue was coated, and red on the tip and edges. Treatment consisted of care of the general hygiene and diet. Lassar's paste was used locally. Diagnosis: Pellagra. The eruption was nearly healed at the time of presentation, and was more marked on his right hand than on the left. His tongue still showed lesions.

DISCUSSION

DR. BLOSSER asked whether the patient had had any intestinal symptoms, such as diarrhea.

DR. GARFIELD replied that he had not.

DR. PERRY remarked that one thing was interesting — that he noticed on the deformed hand a lesion which he was sure was epithelioma.

DR. BLOSSER said that if the patient's statement that he had never had any stomach trouble or chronic diarrhea was correct, he did not believe that the condition could be pellagra, because these symptoms are more essential than any skin signs in making a diagnosis of pellagra. Pellagra is really not a skin disease; it has the same relation to dermatology that typhoid fever has, because the intestinal regions are the primary ones, and you cannot have pellagra without a great deal of intestinal trouble.

DR. CASSELBERRY said that it seemed to him that the time was coming when we would have to draw the line between these malnutrition cases from alcohol with an attendant dermatitis and true pellagra. He believed that the man's condition was due to lack of nutrition, and in consequence the dermatitis had followed.

SYPHILIS, SECONDARY STAGE. Presented by DR. BOARDMAN.

A woman, who entered the hospital the day before, gave a history of a rash of six or seven weeks' duration, with severe sore throat and severe head-

ache. She had been drinking a large amount of alcohol. The Wassermann test was strongly positive. The lesions were those of secondary syphilis, and those on the back of the neck and on the forearm, neck and face were rather unusual. Her face presented a conglomerate papulopustular, syphilitic eruption. There were no papules on the palms or the soles.

DISCUSSION

DR. BOARDMAN pronounced the condition an alcoholic with dermatitis. There was a dermatitis on the arms besides the larger syphilitic eruption.

DR. LLOYD said that the secondary rash was clearly marked. He believed that the dermatitis was not syphilitic.

SYPHILITIC BURSITIS. Presented by DR. B. APPEL.

A man, white, aged 23, unmarried, born in Italy, entered hospital in July, 1924, complaining of swelling over both elbows. Two years previously, he had had rheumatism, involving the elbows and knees, with tender areas over the medial epicondyle on the left side and over the olecranon process on the right. Over these tender areas, there gradually appeared small lumps, which grew in size until they were one-third larger than the one then showing on the right. He gave a definite history of a primary lesion and an inguinal adenitis five years before. At that time he received five injections of neo-arsphenamin, which gave him complete relief. At the time of his entrance, his physical examination was negative except for this condition. He had since received fifteen injections of arsphenamin, 0.3 gm. each, and a considerable amount of potassium iodid and inunctions of mercury. Nine days after he had received four injections of arsphenamin, as well as potassium iodid and mercury inunctions, the bursa on the left arm opened spontaneously. Shortly afterward, there was considerable pain, and he went to his family physician and had it incised. Following the incision, the areas then showing appeared, which broke down and were then discharging sinuses, draining a thick fluid. Roentgenograms showed what were probably gummas underlying the bone under these areas. In one area the periosteal structures were marked, so there was no direct extension to the bone, but in one arm there was a change shown by the roentgen ray which was probably a progressive degeneration of the gumma in the bone which underlay the lesion, and probably these sinuses were connected directly with the bone. Smears from the sinus were negative for tubercle bacilli. There was in the roentgen rays an increased density which corresponded to the gummas. In this area the plate showed a roughening of the periosteum, and a plate taken eighteen days later showed an increase in that process of roughening of the bone.

DISCUSSION

DR. LLOYD said that he saw a somewhat similar case a number of years ago in a person with congenital syphilis, in whom the gummatous process extended so far that there was almost complete ankylosis of the elbow joint. The roentgen ray substantiated the diagnosis.

DR. APPEL asked whether that was the case reported by Dr. Coues.

DR. LLOYD replied that he did not think it was; it was his impression that it was Dr. Post's case, and had never been reported.

DR. PERRY said that he had not seen a similar case, and thought these cases must be somewhat rare.

DR. APPEL said that there were only thirty-four cases reported in the literature: one by Lane, one by Coues, and in 1909 thirty-two collected by Churchman.

CHEILITIS. Presented by DR. BOARDMAN.

A boy, aged 17, had had trouble with the lip for twelve years. Nothing had been done for it. He showed a large lip and some scaling, suggesting cheilitis exfoliativa or cheilitis glandularis.

DISCUSSION

DR. BLOSSER asked whether roentgen-ray treatment had been used.

DR. BOARDMAN replied that the case had just come into the clinic.

DR. BLOSSER said that he had never seen such a case treated by roentgen ray, but that McKee's book on roentgen-ray treatment showed a case of that type before and after treatment.

DERMATITIS EXFOLIATIVA FOLLOWING SULPHARSPHENAMIN. Presented by DR. BOARDMAN.

J. S., a man, an American, aged 66, with latent syphilis, received nine injections of sulpharsphenamin, 0.6 gm., at weekly intervals. Ten days following the last injection, a rash commenced on the face and forearm; it had since become general, involving the membranes of the mouth. A general physical examination was negative. The urine was normal. Since entrance, eight days before, the scaling had increased, with the development of fissures, oozing, and crusting in spots. The condition of the mouth had improved somewhat. He had received four injections of sodium thiosulphate, the amount not stated. After the first injection of thiosulphate, he had a hard time, but since then he had received more injections, and the skin was improving. The mouth was badly affected. He had been getting black wash for the mouth. After the use of the sodium thiosulphate, he said he "saw blue" for quite a while, and then became unconscious. The next day he had headache and fever.

DISCUSSION

DR. LLOYD said that he had not been using sulpharsphenamin very long, but from the few cases in which he had given it, it was his impression that patients were more likely to have a dermatitis from it than from the old preparation. Also, he wanted to be pardoned by Dr. Boardman for suggesting a milder preparation for the mouth.

DR. PERRY remarked that the patient was one who received sulpharsphenamin at the Boston Dispensary. He thought it was the first severe dermatitis they had had from sulpharsphenamin, although they had had one or two mild cases.

DR. GARFIELD said that he had had a case of dermatitis in a girl who had come in with a primary lesion of the lip and had received daily injections of sulpharsphenamin intramuscularly. She was finally discharged from the hospital and came to the outpatient department, and received two or three injections of bismuth. She then stopped coming.

GUMMA OF THE SKULL. Presented by DR. GARFIELD.

S. S., a man, aged 54, born in Italy, came to the surgical outpatient Department with fluctuant tumors on the scalp. He gave a history of having these tumors for four months, and up to a short time ago, they were very hard.

In the surgical outpatient department, it was thought to be an abscess. The tumor was incised, and the record states that considerable pus was obtained. After dressing the wound in the surgical outpatient department for one month, no healing having taken place, pulsation could be seen at the bottom of the wound. The man was sent into the hospital, where a Wassermann test and roentgenogram were taken. The Wassermann test was positive; the roentgenogram showed a syphilitic process of the bone, which at one place had extended through both tables of the skull, and there was a thickened condition of the dura. He was started on injections of arsphenamin, and when last seen a few days ago, there was no pulsation, and the lesion had healed so that there was left only a small sinus about the size of a lead pencil. Gummas of the skull are seen occasionally, but it is uncommon to see both tables perforated.

DISCUSSION

DR. LLOYD remarked that it seemed to him that in his experience gummas of the skull were more unusual than the textbooks lead one to expect, and that it was especially unusual to have involvement of both tables.

DR. PERRY said that he wondered whether they were not less frequent than in the early days. It seemed to him that in his student days such cases going on to necrosis of the frontal bone were more common than they are today. The old skulls and the museum specimens show necrosis much more frequently than we see it today.

DR. BOARDMAN said that he read an article a year or two ago which reported that gummas are frequent among the Mohammedans, who, in praying, beat their frontal bones against the pavement.

DR. PERRY expressed the belief that in Oriental countries necrosis of the bones of the skull was more frequent. In Morocco, necrosis of the nasal bones is relatively common.

DR. LLOYD asked whether it were not possible that some of that was due to lepra.

DR. PERRY replied that he supposed it might be; he did not know how much leprosy there is in Morocco.

DR. LLOYD said that lepra was common in all Oriental countries.

NEW YORK DERMATOLOGICAL SOCIETY

Regular Meeting, Dec. 16, 1924

HANS JORGEN SCHWARTZ, M.D., *President*

A CASE FOR DIAGNOSIS. Presented by DR. FRASER.

A woman, aged 27, unmarried, had suffered during the past five years from a recurring eruption on the mucous membrane of the mouth. The attacks occurred at irregular intervals, and usually lasted from one to two weeks. The case had been diagnosed by a New Orleans physician as pemphigus. Sprue also had been suggested.

DISCUSSION

DR. WHITEHOUSE said that he did not think the history was that of pemphigus. The attacks came on at rather short intervals and lasted only

a short time. While it was evidently an infectious condition involving the mucosa, it was difficult to classify it as any known pathologic entity. Whether it was an infection secondary to the tonsils or teeth and affecting the buccal and labial mucosa, he could not say, but he suspected some such origin and did not think the condition true pemphigus.

Dr. Kingsbury thought that Dr. Whitehouse had said all that could be said about the case. The history was not that of pemphigus; it was a practically self limited type of eruption — it appeared and stayed a definite time without any persistent recurrence. It might be some form of herpes. It did not seem to be an erythema multiforme.

Dr. Trimble said that although the lesions themselves closely resembled the lesions of pemphigus as it appeared in the mouth, the history precluded that diagnosis. He did not see how a patient could have pemphigus of the mouth for five years without having some lesions appear on the body. He had seen cases like this before, one of the patients being a young man, about 22 years of age, who for more than five years had suffered from similar recurrent attacks in the mouth. Each time he had an attack he had the mouth symptoms and a lesion on the prepuce, somewhat on the under surface. It would heal up after a period of several weeks. At the time, it was thought to be erythema multiforme. The naming of these conditions was rather difficult — whether they were due to some systemic poison or to some local infection of the mouth, was a question. He did not think the condition was pemphigus.

Dr. Bechet agreed with the previous speakers in excluding pemphigus. He would not consider erythema multiforme, for after five years' duration of that condition there should be lesions on the body. He suggested that Dr. Fraser make a careful bacteriologic study to determine whether the eruption was not due to some type of fungus. It seemed to be a local parasitic infection.

Dr. Clark was inclined to agree with Dr. Trimble and to make a probable diagnosis of erythema multiforme bullosum. The fact that at one time the patient had been free from any eruption for a period of two and a half years was against the diagnosis of pemphigus. He said that he had under observation a private patient who had had several recurrent attacks almost similar to that which this young woman presented, the last attack occurring about six months before. Under treatment with antiseptics and a carefully selected diet, the eruption had not since appeared — the longest time he had been free from it for more than a year. He had considered it as a case of erythema multiforme, as he would this one.

Dr. Schwartz agreed with the tentative diagnosis of erythema multiforme. He said that the diarrhea might be of some importance as bringing the case under the group of cases reported by Osler under the title of "Visceral Crises in the Erythema Group of Skin Diseases."

Dr. Fraser agreed with the views of the previous speakers that the condition was probably not pemphigus. When he saw the patient three days previously, there were lesions on the mucous membrane of the cheek which very much resembled the iris lesions of erythema multiforme, and it was possible that this case might be a case of recurrent erythema multiforme. He thought that Dr. Bechet's suggestion that the lesions were due to local infection by some form of fungus should also be considered.

Dr. Whitehouse said that if the condition was considered to be erythema multiforme, the treatment suggested by Dr. Clark would be the one most likely

to benefit the patient but if it was simply a local infection, the treatment would have to be considered according to the findings. Sprue or thrush was usually confined to babies and was not a recurring condition of this sort.

A Case for Diagnosis: Parapsoriasis Guttata. Presented by Dr. Bechet.

S. W., a woman, aged 22, stated that the eruption presented had begun three years previously on the back and chest. There were no subjective symptoms, and there had been little if any change in the eruption since that time. The lesions were discrete and consisted of pinkish red to yellowish spots, with complete absence of infiltration. They were of slow evolution and extremely persistent. Treatment had had no appreciable effect.

DISCUSSION

Dr. Trimble said he thought it a difficult case to diagnose, but was inclined to believe that Dr. Bechet was right and that it was a mild case of parapsoriasis lichenoides. He could offer no suggestions as to treatment.

Lupus Vulgaris. Presented by Dr. Trimble.

P. G., a woman, aged 25, born in Germany, stated that she had first noticed a lesion on the nose two years before; other lesions had appeared later from time to time. The lesion on the nose had been treated in Germany with the roentgen-ray, but no treatment had been applied to the lesions on the cheek. The latter lesions were peculiar as they resembled impetigo, that is, they were covered with a candy-colored crust. The case was shown on account of the peculiarity of the lesion on the cheek.

DISCUSSION

The diagnosis was generally accepted.

Dr. Trimble expressed pleasure that the members agreed with the diagnosis suggested. His reason for presenting the patient was the appearance of the two lesions on the cheek, which looked like impetiginous crusts. The patient was a reasonably intelligent young woman, and the lesions mentioned had not been treated. He had never seen lupus vulgaris lesions with such a peculiar clinical appearance.

Prurigo of Hebra. Presented by Dr. Clark.

C. M., previously shown at the Academy Section, a school-girl, aged 10, born in the United States, first began to have the eruption presented when 3 months of age, and since that time it had persisted almost constantly. The patient had always been in fairly good health, never having had any serious illness, and the only medication that she had personally used was cuticura ointment applied locally to allay the itching; she had used nothing internally.

When first seen, she presented a nodular, thick, infiltrated, rather chronic condition of the skin of the face, arms and legs, which looked like eczema, and a pigmentation of the body with a lichenification rather than the nodular type of lesions found on the arms and legs.

The diagnosis of prurigo of Hebra was not made at first, owing to the character of the pigmented lesions on the body which, both macroscopically and microscopically, exactly simulated the lesions seen on another patient in the ward at that time, which were of undoubted arsenical causation. A

pathologic examination of the pigmented lichenified lesions on the body of the child gave a similar picture to that of the patient suffering from arsenical dermatitis. A rather sharp termination or margination of the lesions on the lower part of the thighs, with clear areas around the knees in the axillae and groins, did not seem to be an exact part of a prurigo. The lesions of the extremities and face, however, seemed to be characteristic, and that diagnosis now seemed to be the most likely one, in spite of the extensive pigmentation and lichenification.

The child had received numerous injections of sodium thiosulphate on the supposition that her rather unusual eruption might have been arsenical in origin, from a source unknown.

DISCUSSION

Dr. Whitehouse said that he thought the case was remarkable; it did not conform exactly to the prurigo of Hebra, which is primarily a pruritus, and nodular lesions and hard papules develop as a result of the scratching. This case, with the keratotic lesions on the back and front, the infiltration and the thickened patches with sharply defined borders on the thigh, did not conform to the Hebra type of prurigo seen years ago; still it might be that type of case. He could suggest no other diagnosis.

Dr. Kingsbury said that in the absence of a more definite diagnosis he would classify the condition as prurigo of Hebra, although it was not a typical case.

Dr. Trimble was inclined to call the case prurigo of Hebra as a tentative diagnosis. It had many of the features of the intense variety as against the mild type. Prurigo ferox is not often seen in this country, but this case would fit in reasonably well with a number of atypical cases that have been illustrated. He had never seen a case in which there were so many lesions on the trunk or lesions of such character as those on the trunk—the follicular lesions. That was an interesting feature; another was the sharp line of demarcation against healthy skin on both thighs. If the eruption were present only on the arms and legs, with scattered papules on the body, it might very well be called prurigo of Hebra.

Dr. Bechet could not reconcile the follicular lesions with the diagnosis of prurigo. The follicular element was so prominent that it looked almost like pityriasis rubra pilaris. There were areas of healthy skin between the aggregated patches of eruption; this also favored pityriasis rubra pilaris. However, he would not definitely suggest such a diagnosis. At the present time, he would not consider the diagnosis of prurigo as absolutely correct.

Dr. Fraser said that he thought the point brought up by Dr. Bechet worthy of serious consideration. He had not himself sufficient experience to offer a diagnosis.

Dr. Schwartz said that he felt somewhat as did Dr. Bechet and Dr. Fraser in regard to that one point. At one time he had seen a number of cases of prurigo, but he could not recall any case of diffuse follicular involvement like that presented by this patient.

Dr. Clark said that the case had excited a great deal of interest at the Skin and Cancer Hospital because of its similarity to a known case of arsenical pigmentation with a great deal of eruption. The pathologic picture of the slide was apparently exactly like that of the pigmented eruption in a man who had been taking large quantities of arsenic and whose arsenical elimina-

tion had been watched at intervals of every day or two. On the strength of that similarity, the diagnosis of prurigo of Hebra had been held in abeyance, and the child was put on a treatment with injections of sodium thiosulphate without, however, marked improvement so far. The history was indefinite as to the injection of any form of arsenic or to any possibility of any inhalation of arsenic, so far as could be found out. For that reason, he had rather inclined to the diagnosis of prurigo of Hebra, although he recognized that the lichenoid lesions on the back were usually not found in that condition, and the pigmentation of the body certainly looked arsenical. The lesions of the arms and legs closely simulated prurigo.

LUPUS VULGARIS OF THE NOSE. Presented by DR. CLARK.

H. L., aged 64, an American, first had trouble with the mucous membrane of his nose about two years before presentation, and a diagnosis of tuberculosis of the nasal mucosa was made at the Manhattan Eye and Ear Hospital one year before. Radium was then applied, and one month later the patient noticed a pimple on the tip of the nose. The condition had spread, until when the patient first presented himself, he had a granular, undermined, ulcerating lesion of the tip of the nose and the free edge of the nasal septum, with an ulcerating extension up into the right nasal fossa. On top of the nose was a soft apple-jelly colored nodule that seemed characteristic of lupus vulgaris. Owing to a difference of opinion at the clinic as to the diagnosis, the patient had been given antisyphiltic treatment for one month, without effect. Several Wassermann tests had been negative.

DISCUSSION

DR. FRASER said that this was one of those cases which should have been settled by histologic examination.

DR. TRIMBLE agreed with the clinical diagnosis of lupus vulgaris, and said that the prevailing ideas on this subject would have to be somewhat revolutionized. In the Bellevue clinic and in the other clinics, it was common to see tuberculous ulcers which encroached on the healthy skin after starting on the mucous membrane; that would account for its beginning late in life, as it did in this case. Lupus was generally regarded as beginning early in life, but this began inside the nose and appeared later on the outside. Such cases were probably seen more frequently in the nose and throat clinics than in other clinics, the patients seeking the dermatologists only when the lesions appeared on the surface.

DR. WHITEHOUSE would agree with the diagnosis of lupus vulgaris if the therapeutic test eliminated syphilis. The nodules on the right ala began on the mucous surface and spread outward.

DR. CLARK said that he thought the diagnosis could be made from the apple-jelly tubercle on the nose — soft in consistency, and like apple-jelly in color, which under the diascope gave the typical picture of a lupus vulgaris nodule. These lesions were frequently difficult to distinguish from syphilis, but biopsy would decide it.

XERODERMATOUS ERUPTION. Presented by DR. WILLIAMS.

A girl, aged 7, who had been perfectly well until last June, had an eruption which began on one hand and spread to the elbows, then occurred on the feet and spread to the legs. The appearance was that of an extreme xeroderma or

mild ichthyosis of the affected parts, but the condition was not universal nor was the dryness confined to the parts in which itchthyosis is usually most marked. On the contrary, there were bands of normal skin extending down the legs, while the margin of the eruption was clear and distinct.

DISCUSSION

DR. TRIMBLE said the case was most interesting, and he was inclined to feel that it was a case of ichthyosiform congenital erythroderma. It had some features of acrodermatitis atrophicans, but they were not marked. He did not think that the ichthyosiform elements were common in acrodermatitis. The case seemed to fit in very well with an early case of ichthyosiform erythroderma.

DR. BECHET agreed with Dr. Trimble's conception of the case. The outlying patch on the right thigh seemed to show a bandlike atrophy on the edge. This did not usually occur in a case of ichthyosiform erythroderma. In spite of this, however, that diagnosis was plausible.

DR. WHITEHOUSE said that the diagnosis of ichthyosiform erythroderma should be entertained, although the atrophy was not a part of that disease.

LUPUS VULGARIS OF THE LIPS AND BUCCAL MUCOSA MARKEDLY IMPROVED BY KROMAYER LIGHT LOCALLY AND ALPINE SUN GENERALLY. Presented by DR. CLARK.

F. H., an American boy, aged 16, first began to have a lesion on the mucous membrane of the lower lip four and a half years before presentation. This lesion spread over the mucous membrane, surrounding the mouth as indolent, easily bleeding, granulating ulcers. About a year ago, the eruption spread rapidly back on the mucous membrane of the cheeks and extended out on both the upper and lower lips, entirely surrounding the mouth. The patient was poorly nourished, could open his mouth with difficulty, and seemed in a rather bad way except that there were no physical signs of tuberculosis in his chest or any other tuberculous involvement. A Pirquet test was positive when the boy was first seen two years before presentation. Under general hygienic and tonic treatment and the use of tuberculin, he made practically no improvement for a period of a year; but during the past year, without tuberculin injections and with local applications of Kromayer light, under pressure, to the lesions within and without the mouth, and general exposures of the Alpine sun lamp for the tonic effect, the ulcers had practically healed, and only scattered nodules of lupus vulgaris seemed to remain.

DISCUSSION

DR. WHITEHOUSE said that he thought it a remarkable result at the present time. The appearance of the boy spoke well for the use of the Alpine sun lamp over the body generally.

LUPUS VULGARIS. Presented by DR. BECHET.

A. K., aged 42, born in Poland, presented himself at Dr. Aitken's service stating that the lesion had been present for thirty years, and that there had been little change in it for the past twenty years. The lesion was large, measuring about 3 inches (7.6 cm.) in diameter; but it was very superficial, with no ulceration nor tendency to excessive scarring. It was situated on the right buttock, and presented a serpiginous outline.

DISCUSSION

The diagnosis was generally accepted.

DR. BECHET said that the patch was a rather superficial one and demonstrated how lupus vulgaris could pursue a benign course. The lesion was of thirty years' duration, yet there was no ulceration and little scarring. In this respect, it was an exceptional case.

DERMATITIS REPENS. Presented by DR. CLARK.

J. D., aged 36, without occupation owing to blindness, began six months before presentation to have an eruption on the palm of the left hand near the base of the fingers; and later the hypothenar eminence of the right hand became involved in a similar manner. The right finger also presented an active involvement. The lesions began as pustular inflammations and seemed to spread by an undermining of the skin, leaving a desquamation after them with rather a marginated creeping edge made up of a raised, overhanging, loosened fringe of epithelium. The lesions had been regularly negative for any of the various types of ringworm infection.

DISCUSSION

DR. WISE agreed with the diagnosis.

DR. TRIMBLE said that if he had seen the case for the first time, he would have called it an epidermophytosis. The term dermatitis repens did not mean much to him — just an undermining of the epidermis with pus. He usually regarded it as a symptom and not as a definite disease. This case would not fit in at all with his conception of dermatitis repens.

DR. BECHET said he believed that Dr. Trimble's point was well taken. Dr. Clark had, however, studied the case, and probably the pustular condition had partially subsided; but the clinical picture as presented certainly suggested dermophytosis rather than dermatitis repens.

DR. FRASER agreed with Dr. Bechet and Dr. Trimble.

DR. CLARK said that the active lesion on the thumb showed the condition that Dr. Trimble had spoken of — an inflammation in the skin, pustular in character, that peeled off. At times all of these lesions had been infiltrating in the skin and spreading outward. The lesions were better now than they had been. Every effort had been made to demonstrate epidermophytosis, but all attempts were negative.

LEPROSY. Presented by DR. CLARK.

R. S., a married woman, aged 35, born in Columbia, S. A., a kitchen worker, came to this country seven years before presentation. A few years after arrival, pimples and nodular eruptions began to appear on the face, arms, trunk and legs, varying in size from that of a pea to that of a Lima bean, dusky red and not tender.

When first seen, the patient presented the rather typical facies of Hansen's disease, with an infiltration and thickening in the vicinity of the forehead and eyebrows and a distinct thinning of the hairs at the outer edges of the eyebrows, producing the rather characteristic leonine countenance. The nodular lesions had persisted and increased, and the patient had symmetrical areas of anesthesia. Both ulnar nerves seemed enlarged. The blood Wassermann reaction was found to be four plus, and smears for Hansen's bacillus from

the nose resulted in positive findings. The patient had made rather remarkable improvement during the past six months under treatment with ethyl esters of Chalmoogra oil.

A. SCHUYLER CLARK, M.D., Secretary.

DETROIT DERMATOLOGICAL SOCIETY

Regular Meeting, Dec. 16, 1924

UDO J. WILE, M.D., *Presiding*

URTICARIA. Presented by DR. VALADE.

E. H., aged 41, unmarried, an automobile painter, had first noticed the appearance of a pruritic erythematous patch over the upper portion of the sternum one week previously. Within a few hours the eruption had spread, involving all parts except the hands, neck and face. There were numerous scratched papules and a few wheals, together with dermographism. Several of the teeth were crowned. Cooked oysters had been eaten three days before the onset of the eruption. The case was presented on account of the interesting distribution of the lesions, the face, neck and hands being unaffected.

DISCUSSION

DR. SCHILLER remarked concerning the presence of dermographism, and of pigmented lesions on the flanks.

DR. WOLLENBERG said that this was a case of papular urticaria, probably due to sensitization to oysters.

A CASE FOR DIAGNOSIS: PSEUDOXANTHOMA ELASTICUM? Presented by DR. JAMIESON.

Miss J. O., aged 26, a teacher, was apparently in good general health, and her past history was irrelevant. About three years previously, a group of small pale patches of intracutaneous thickening appeared on each side of the base of the neck. The lesions were not elevated, there were no subjective symptoms, and there seemed to be no tendency to involution of any lesion after it had developed.

DISCUSSION

DR. WANDER said that he could offer no definite diagnosis; there was no history of preceding inflammation.

DR. PARKHURST said that the lesions were white and palpable, with no sign of superficial atrophy or scarring, an appearance suggestive of colloid degeneration of the skin.

DR. WILE said that only a biopsy examination could settle the question as to whether this might be a case of pseudoxanthoma elasticum or one of colloid degeneration of the skin.

TUBERCULOSIS CUTIS; KELOID. Presented by DR. VAN RHEE.

A negro, aged 22, presented ulcerating lesions on both sides of the neck, on the right cheek, on the upper right arm and on the posterior surface of the right thigh. The condition was of three years' duration, and a large

lesion on the right side of the neck had been excised. There was a swelling below the right eye of three years' duration.

DISCUSSION

DR. WILE said that hypertrophic lupus vulgaris was more common in negroes, and might be associated with their tendency toward keloids.

DERMATITIS MEDICAMENTOSA DUE TO NEO-ARSPHENAMIN. Presented by DR. TROXELL.

Mr. J. W., aged 20, American-born, a laborer, had first been seen by Dr. Troxell in May, 1924, at which time he had a severe exfoliative dermatitis following a course of five injections of neo-arsphenamin. This condition had gradually cleared up, and by the middle of June, 1924, the skin was apparently normal; at that time the Wassermann reaction of the blood was negative.

On Dec. 6, 1924, a primary syphilitic lesion appeared, and an injection of 0.3 gm. of neo-arsphenamin was given. Five hours later, there appeared a generalized dull erythematous eruption, with considerable edema of the face and arms. This outbreak was followed by nausea and fever. Intravenous injections of sodium thiosulphate were being given daily, in increasing dosage.

DISCUSSION

DR. JAMIESON said that there was no question as to the diagnosis. He was thankful that we had so reliable a neutralizer in sodium thiosulphate.

DR. TROXELL asked for suggestions as to further antisyphilitic treatment in this case.

DR. SCHILLER commented favorably on bismuth therapy.

DR. BREITENBACH said that dehydrated bismuth caused less pain than other forms when injected, and was apparently more efficient.

ALOPECIA SYPHILITICA. Presented by DR. VAN RHEE.

A young man who denied having had a chancre, had first noticed the appearance of a mottled alopecia of the scalp in June, 1924. A penile sore was found at that time. There was cervical adenitis and leukoderma colli. The Wassermann reaction of the blood and spinal fluid was strongly positive.

DISCUSSION

DR. BIDDLE said that syphilitic leukoderma of the neck with syphilitic alopecia usually indicated the presence of central nervous system involvement.

DR. WILE said that about 70 per cent. of these patients had positive spinal fluid findings. He felt that this loss of hair might well be due to a disturbance of the innervation rather than to a local eruption. It occurred also on other hairy parts of the body.

CONGENITAL SYPHILIS: FLAT PAPULAR SYPHILID. Presented by DR. VAN RHEE.

A. J., a boy, aged 2 months, presented flat papular lesions with slight scaling on the palms, soles, face, arms, thighs and buttocks. The lesions had appeared five days previously. The mother had acquired syphilis two years previously, and her Wassermann reaction was strongly positive.

DISCUSSION

Dr. Jamieson remarked that, according to the history, the mother had received antisyphilitic treatment during pregnancy.

Neurofibromatosis. Presented by Dr. Van Rhee.

Mr. A. C., aged 39, an electrician, presented slightly pigmented tumors of various sizes on the eyelids and other portions of the face, and on the neck, chest, back and abdomen. There were a few tumors on the thigh, and also on the tongue. The condition had first appeared in 1910, following an attack of pneumonia and typhoid fever.

DISCUSSION

Dr. Wile remarked on the small amount of pigmentation in this case.

H. J. Parkhurst, M.D., Reporter.

CHICAGO DERMATOLOGICAL SOCIETY

Regular Meeting, Dec. 17, 1924

James Herbert Mitchell, M.D., *Presiding*

Multiple Superficial Epithelioma. Presented by Drs. Ormsby and Mitchell.

A man, aged 77, with a disorder of twenty-four years' duration, had lesions which were variously sized plaques. The patient reported the surgical removal of a tumor from the left axilla ten years before presentation and another from the right shoulder seven years later.

The eruption has always been treated as psoriasis. The lesions have gradually increased in size, and none has healed. The largest was situated on the right shoulder and measured 10 by 30 cm. It formerly existed as two circular areas which enlarged and coalesced. Nine other lesions were present, situated on the right side of the neck, the upper and posterior surfaces of the right ear, and its lobe, the left supraclavicular and infraclavicular fossae, the region below the left scapula and the dorsum of the left hand. The patches were all erythematous and scaling or crust covered. Some had a well-defined, narrow, slightly elevated margin; others gradually shaded off into the normal skin. In the center of the largest lesion, a hazelnut sized, vegetating, crust covered mass was present, and in its vicinity a scar, the result of the excision of a previous tumor. The amount of inflammatory reaction varied in different areas, as indicated by the scaling and crusting, the latter being more marked in the large lesion over the shoulder. A histologic report will be made later.

This case was presented as an example of a special type of epithelioma, and was similar to several others presented by Drs. Ormsby and Mitchell during the past several years. Some confusion apparently exists concerning this type of epithelioma, extramammary Paget's disease and the precancerous dermatosis of Bowen. In cases of the type now presented, these lesions are usually basal cell epitheliomas.

DISCUSSION

Dr. John E. Lane said that Dr. Ormsby's statement in regard to the confusion about the name of the disorder brought up the same dispute that always

occurred in the New York societies as to where the disorder should be placed. He had never felt that it was particularly useful to try to classify such cases too closely. This case was of the "multiple superficial epithelioma" type.

Dr. Wile was entirely in agreement with Dr. Ormsby's view that this type should not be called Bowen's precancerous type, for it was already a degenerative process. The term "precancerous" should be eliminated, for the condition either is cancer or is not cancer.

Dr. Pusey said that he did not believe this was a case of Bowen's disease, but that it was a definite clinical entity that should have some definite name; it is a characteristic condition. He recalled a case seen recently in a middle-aged woman, who also had psoriasis, which was the only case he had seen associated with psoriasis. She had epitheliomas with the very thin, rolled borders, and on the forehead had a well developed epithelioma the thickness of a marrow, fat pea, and with a diameter of 3 or 4 mm. He had another case which had been under observation for eight or ten years. The lesions were extremely indolent — they were undoubtedly epitheliomas, usually basal cell. They presented a typical picture, and the cases should be recognized as a definite entity in epithelioma. As to treatment, the lesions were so superficial that some of them could be cured by carbon dioxid snow. He said that they had cured other lesions with roentgenotherapy, others with radium, and recently his assistant, Dr. Weber, had cured a good many by painting them with acid nitrate of mercury.

Dr. Foerster said he thought that some of the cases like the present one were reported in the literature with the diagnosis of simple Paget's disease, judging from the pictures, and he believed a definite distinction should be made. In the cases like the one presented, the lesions are of an inflammatory type at the margin without a sharp definition, and lack the peculiar almost lilac color of the very narrow border. There is also a great deal of eczematization in the center, which is seen in Paget's disease. Paget's disease, he believed, is much less inflammatory at the border. He asked what experience the others had regarding recurrence following treatment.

Dr. Pusey said that as far as he could make out clinically, the two types could not be easily distinguished. Even with Paget's disease of the nipple, he knew of no criteria by which the types could be differentiated clinically. Sometimes the lesions are inflammatory and sometimes they are not.

Dr. John E. Lane said that his experience had been just the opposite of Dr. Pusey's. He had to give very large doses of the roentgen ray to influence the lesions, and some of the lesions do not respond and have to be excised.

Dr. Weber said the lesions he had treated with acid nitrate of mercury had all responded well.

Dr. Senear called attention to an article by Little, in the last number of the *British Medical Journal*, who said that he and others had seen these cases for some time, but that there was no description of them in the literature. He also mentioned that psoriasis had occurred in several of the cases, but he thought that there was no relation between the two. Little also commented on the marked radioresistance of the lesions and gave treatment with carbon dioxid snow as the method of choice.

Dr. Ormsby expressed pleasure that the gentlemen agreed that it was not an example of Bowen's "precancerous dermatoses." Within two weeks, he had seen a patient with lesions of psoriasis associated with multiple epitheliomas of this type. He had had at least two other such cases. The

first case of this type of lesion shown before this Society many years ago was exhibited as an example of extramammary Paget's disease. In this instance, one lesion occurred over the mammary region. The patient, a man, subsequently developed prickle cell epitheliomas which metastasized and terminated fatally. Several cases similar to the one presented have been seen, and some of them have been recorded. He believed that it is difficult to make a clinical distinction between these and extrammary Paget's disease. He said that he had forwarded photographs of one of these to Graham Little, who, in a personal communication, expressed the opinion that it was the disorder described by him as erythematoid epithelioma. A microscopic report of this patient is to be made in the future.

DR. FOERSTER said that he thought the lilac color and very fine beading at the edge was a point of value in distinguishing Paget's disease.

DR. JOHN E. LANE expressed the opinion that the name "precancerous" should be eliminated from Bowen's disease, and said that almost every one believed that cases of Bowen's disease were cancerous.

ATROPHIA PILORUM. Presented by DRS. ORMSBY and MITCHELL.

This patient was seen at a meeting of this Society in April, 1924, and the case was recorded in THE ARCHIVES OF DERMATOLOGY AND SYPHILOLOGY 1924, volume 10, page 393.

The patient was presented again to show the marked change in the condition. Except in two areas on the sides of the scalp, the hair had grown to the length of 3 inches (7.6 cm.). It still presented constricted portions, but the former beaded appearance was not apparent, owing to the constrictions being at a much greater distance from each other.

DISCUSSION

DR. JOHN E. LANE said that the gross appearance resembled monilethrix, but if the typical structure was not found in the hair, he did not see how a definite diagnosis could be made. The little keratotic points usually seen on the nucha were not present.

DR. FOERSTER said that when he saw the patient last, he thought some of the hairs under the microscope showed a twisting rather than an actual beading.

DR. ORMSBY said that when they examined the hair under the microscope, it appeared to have small nodes. They had not been able to prove whether there was twisting or actual beading, but it was unquestionably a congenital atrophy.

PSORIASIS OF NAILS. Presented by DR. FINNERUD.

A girl, aged 4 years and 6 months, had a disease of the nails. The skin had always been clear. When first seen, there was undermining at the distal end of the nails and pitting of several of them. No fungi could be found on microscopic examination. The child had recently developed two itching lesions back of the knee, but these had not the appearance of psoriasis.

Under treatment with salicylic acid ointment, the pitting and undermining of the nails had been somewhat relieved.

DISCUSSION

DR. OLIVER agreed with the diagnosis.

Dr. Finnerud said that when he first saw the child, there was more marked involvement, but they had been using salicylic acid and ammoniated mercury ointment since August. When first seen, the nails were undermined distally, chiefly at the corners. This condition had practically disappeared, but two of the nails still showed this change, and several of them showed pitting. He believed that the patient ultimately would develop the skin lesions of psoriasis.

A Case for Diagnosis. Presented by Dr. Senear.

A man, aged 70, a painter, seen for the first time on the day of presentation, had an eruption which involved the backs of the hands and the forearms. During the ten days before presentation, considerable edema had appeared. The patient was presented because of the peculiar limitation of the eruption, with the sharp line of demarcation on the wrists and fingers. He gave a history of being constipated and taking laxatives more or less regularly, but there was no suggestion of diarrhea at any time.

DISCUSSION

Dr. Ormsby stated that fourteen years ago, when he was working on the Pellagra Commission, they saw many cases with lesions somewhat similar to these. There was usually one area of normal skin on the flexor surface of the wrist which was characteristic. In the present case, the dermatitis extended entirely around the wrist. The lesions of pellagra were well defined, no matter where they occurred. He believed this was a case of professional dermatitis that for some unaccountable reason had a well defined margin.

Dr. Goeckermann agreed with Dr. Ormsby.

Dr. Mitchell said that they had seen several cases from the Western Electric Company. Dr. Smith had investigated the paint, and found that it contained a small amount of Japanese lacquer.

Dr. Ravitch thought pellagra rarely developed at this time of the year, and that the lesions were not typical. The eruption looked to him more like a trade dermatitis.

Dr. Pusey agreed that the man had an external irritant dermatitis on the back of the arm, but he did not know any external irritant dermatitis that would produce the sharp margin which he had, or that would leave the palms so notably free of irritation. He thought it possible that there might be a mild pellagra under the dermatitis.

Dr. Ormsby said it was interesting to note that the dermatitis on the dorsal surfaces of the hands here ended in a distinct line in the same location that a palmar keratoderma ends as it advances from the palmar surface. Whatever the anatomic difference was between the palmar and dorsal surfaces, it evidently determined the limitation of the dermatitis.

Dr. Senear agreed with Dr. Pusey that the man had an external irritant dermatitis, but because of the sharp demarcation and the fact that he had suddenly become much worse during the last few weeks, he thought possibly there was an underlying pellagra.

Lichen Planus. Presented by Dr. Ebert (by invitation).

A negro, aged 38, from Dr. Ormby's clinic, had an eruption which started on the dorsa of the hands and spread over the trunk and extremities. The mucous membrane of the mouth was free, but there was involvement of the

glans penis. Pigmentation appeared about ten days after the papular eruption and was the most marked feature at the time of presentation.

The lesions consisted of groups of pinhead-sized, angular, papules with flat tops, raised slightly above the surface of the surrounding skin. The papules had the characteristic sheen when viewed with reflected light, and many were arranged in circles. On the legs, the pigmentation was diffuse, and on the body it was macular.

DISCUSSION

DR. GOECKERMANN expressed the opinion that it was probably a case of lichen planus.

DR. HARRY R. FOERSTER said that he thought the condition was a typical lichen planus, and that the microscopic section confirmed this diagnosis.

DR. ZEISLER said that they had seen a considerable number of cases of lichen planus in the colored race. He was able to make the diagnosis at a distance because of the peculiar violaceous black color of the lesions.

DR. WILE agreed with the diagnosis.

SYPHILOID ECZEMA. Presented by DR. HEDGE for DR. STILLIANS.

A negro girl, aged 17 months, had an eruption on the thighs which had appeared six weeks before. There was slight kyphosis but no disturbance of the general health. On the inner side of both thighs were many discrete, sharply defined papules, from 0.1 cm. to 0.3 cm. in diameter, round and distinctly elevated. They at first had flat tops, but later a tiny vesicle developed on the top, which broke and left the papule umbilicated. Definitely red at first, they later became brownish, and on regression, left a deep brown stain. The eruption has been seen to clear up and return, according to the cleanliness employed. The Pirquet and Wassermann reactions were negative.

DISCUSSION

DR. JOHN E. LANE said he thought that it was a typical case of Jacquet's disease (érytheme papuleux fessier post-érosive) nearly cured.

DR. LIEBERTHAL agreed with the diagnosis.

A CASE FOR DIAGNOSIS. Presented by DRS. ORMSBY and MITCHELL.

A negro, aged 21, had a disorder of several months' duration. The patient stated that the first lesion occurred as a dime-sized, scaling patch on the left side of the forehead in front at the margin of the scalp. Shortly afterward, the second lesion appeared on the chin, and two months later other lesions appeared in the groin. Six months before presentation, the disorder became more general, appearing on the chest, abdomen, arms and lower extremities. The patient complained of much itching. The patient stated that he had a primary lesion in the genital region two years before; when presented, he had gonorrhea.

The lesions occurred chiefly as round or oval patches, some of which had coalesced to produce gyrate configurations, varying in size from small to large coins. The patches were well defined, and were made up of acuminate papules, from the apex of many of which a keratotic plug protruded. Moderate scaling was present, which gave the patches a gray appearance on the colored skin. Little infiltration existed in the patches. Numerous discrete papules were irregularly scattered over the trunk. The papules were more numerous in the patches on the back of the neck than elsewhere.

DISCUSSION

DR. SENEAR expressed interest in this case from two standpoints. For six or eight years similar cases of follicular eruption in negroes had been presented, sometimes mildly pruritic and sometimes exceedingly pruritic, which finally led to lichenification, but they had never been able to place these cases. He did not think this case belonged in that group, but believed this patient had lesions of the lichen spinulosus type. The whole group is interesting. When they first presented these cases, Dr. Ormsby and Dr. Senear showed patients with folliculitis decalvans with lichen spinulosus of the body. When Dr. Senear reported his case, four or five had already been reported in the English literature. At that time, he spoke of the analogy between these cases and the tricophytid cases. In one of the recent numbers of the *British Medical Journal*, Lowe published an article on trichophytosis and microsporosis, and expressed the same idea, saying that while all cases are not due to ringworm of the scalp, they may all be shown to be "ides" of some type. Dr. Senear said that was his conception. There are many types of these cases of lichen spinulosus. Wallhauser described one in which the patient, who sat with his legs crossed, had lesions at the elbows and on the outer side of the knee. The chafing was undoubtedly the underlying cause. That was not true in the case presented, but Dr. Senear believed that the cases were nearly all of toxic origin.

DR. WILE said that he thought Dr. Senear placed these cases in the group of endogenous toxemias. He was struck with the extraordinary configuration, which he thought meant something definite; either an eruption which was proceeding along definite margins, owing to a parasitic growth, or an eruption which was related to the configuration one finds with toxic erythemas. It was, however, hard to reconcile the picture with trichophyton infection or erythema, owing to the extraordinary degree of keratosis. Dr. Wile expressed himself as being completely "in the dark" with regard to the diagnosis.

DR. LIEBERTHAL said that he had an almost similar case which he had intended to present but the lesions had healed. He thought that similar lesions with keratotic affection of the follicles occurred in various conditions, such as seborrhea and other scaly dermatoses, but that lichen spinulosus was a disease per se.

DR. HARRY R. FOERSTER said that he regarded the absence of a definitely localized mycosis of value in making the differentiation.

DR. FINNERUD said that if the disorder were due to *Trichophyton* or *Microsporon*, it would undoubtedly have disappeared long before this, for those eruptions seldom last longer than a few weeks. He had thought of that possibility. In spite of the absence of palmar and plantar changes and changes on the face, he thought that pityriasis rubra pilaris would have to be considered in making the diagnosis.

DR. FOERSTER declared that lichen spinulosus as usually looked on could be ruled out, owing to the age of the patient. Most of the cases reported have occurred in children. He also thought that most of the lesions in this case were too coarse, that they were not the fine, very small follicular lesions seen in true lichen spinulosus; in addition, there were the peculiar oval and oblong lesions which he believed would rule out lichen spinulosus. He could not offer any diagnosis.

DR. ORMSBY said that the case was presented for diagnosis. He agreed with everything that had been said. He had studied the cases of lichen spinu-

losus with alopecia decalvans carefully, and there was no question but that there were lesions in this case that were like some of the lesions in those cases; but this is not lichen spinulosus described by the English. Lichen spinulosis never has the erythema multiforme-like configuration that was present here. He thought Dr. Senear was right in regard to its being an intoxication of some undetermined origin.

A Case for Diagnosis. Presented by Drs. Ormsby and Mitchell.

A negro, aged 34, had an acute eruptive disorder of ten days' duration. The eruption occurred on the neck, particularly at the sides and back, over the shoulders and arms. The eruption consisted of oval and round, macular and maculopapular, edematous appearing lesions, varying in size from that of a pin-head to that of a dime and larger. Slight scaling was present on some of the smaller lesions. In addition, there were also a number of small, discrete papules. There were no subjective symptoms. The patient was under treatment for syphilis.

DISCUSSION

Dr. Wile believed that it was an unusual type of pityriasis rosea. He said that he had seen a few cases of this disorder in which the lesions did not appear on the usual sites, particularly cases in which the lesions were present on the neck. The rather short duration of the lesions and the fact that there were two types, one the annular and one the small scaling papular, he believed put the case in the class of unusual pityriasis rosea.

Dr. McEwen was inclined to consider the case an expression of syphilis. The diagnosis of pityriasis rosea had not occurred to him, although that disease often occurs in atypical forms.

Dr. Senear agreed with Dr. Wile, and said that the long axes of the lesions were parallel around the axilla, changing their direction and conforming perfectly to the lines of the skin.

Dr. Lieberthal said that he did not think the condition was a syphilid, but that it might be seborrhea or pityriasis rosea, as suggested by Dr. Wile.

Dr. Ormsby said that the hyperpigmentation near the axilla had been present always and was probably a birth-mark. The light color over the front part of the neck was also a normal condition. He thought the suggestion of pityriasis rosea was interesting, and that the case was probably one of this disorder. If there was a definite scaling, he believed this diagnosis would stand first, but toxic erythema was also to be considered.

Lupus Erythematosus, Sarcoid. Presented by Dr. Oliver.

A woman, aged 35, had lesions of three years' duration. There were seven typical lesions on the scalp, one on the right upper arm and one on the forehead in the right temporal region. About two months before presentation, she had noticed several "lumps" or deep-seated nodules, one on each upper arm on the extensor aspect and another on the right buttock.

DISCUSSION

Dr. John E. Lane said he would classify the subcutaneous lesions as sarcoid. While bluish subcutaneous lesions of the skin are likely to be called sarcoid, he thought the combination with lupus erythematosus was a confirmatory point, as the two are frequently seen close together.

Dr. Finnerud expressed the opinion that sarcoid was most likely the associated lesion, but other tuberculids are sometimes associated. He would also consider, therefore, beginning lesions of erythema induratum.

Dr. Ormsby said that he presented a patient before the meeting of the American Dermatological Association in 1914 who had had lupus erythematosus for twenty-three years, a part of which time she had been treated by the late Dr. Hyde. Some months previous to this meeting, nodules and plaques developed on the face. Dr. Arndt, who was attending this meeting, recognized the new lesions to be sarcoid. A subsequent microscopic examination confirmed this diagnosis. In the present case, some of the lesions appeared to be typical sarcoid.

Dr. Pusey said that he was a little suspicious about the history of recent development. He did not see any bluish discoloration on the arm. He thought these lesions were the little masses that are not uncommon in many people, and which are small connective tissue tumors.

Dr. Senear said that they recently had an interesting case which was almost similar to this one. The patient had what appeared to be lupus erythematosus on the face, and on the shoulders and extremities typical sarcoid. Biopsy showed the lesions thought to be lupus erythematosus to be typical lupus vulgaris microscopically, a lupus vulgaris erythematodes.

Dr. Oliver said that he had not seen the patient for two months until a few days before presentation, when she applied for treatment on account of the appearance of the new nodules on the arms and buttock. The lesion on the right extensor surface was most prominent. It was not tender, but the patient was alarmed. The case was presented with the possible diagnosis of sarcoid. There was no discoloration when he saw her a few days before, but on the upper arm there was a patch of lupus erythematosus and the nodule further down.

Book Review

INTRODUCTION TO DERMATOLOGY. By SIR NORMAN WALKER. Eighth edition. Eighth volume. Price, $7. Pp. 371, with 92 plates and 80 illustrations. New York: William Wood & Company, 1925.

It is only necessary to call attention to this new edition of Walker's "Dermatology." A work that has been a standard book for twenty-six years and that has gone through eight editions can claim the quality of old wine. Its character has long been known. Its author is a skilful dermatologist, with broad, general training, and he is a wise man. The book, accordingly, has character, and as a result has always been one of the interesting, original works on the subject. It has the great virtue of being reasonably compact. The colored illustrations, of which there are ninety-two, are excellent.

Altogether it is a good book.

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